

**InfiniBand test** Intel's decision to end chipset production for the high-speed I/O technology has few worried. **PAGE 12.**



**Seeking the QoS Holy Grail**  
We put a variety of QoS devices to the test. **PAGE 53.**

# NetworkWorld

The leader in network knowledge ■ www.nwfusion.com

June 3, 2002 ■ Volume 19, Number 22

## WISHLIST

### What customers want from Cisco

■ BY PHIL HOCHMUTH

With dominant market share in almost every enterprise network equipment category, Cisco is the product supplier to most IT professionals, from small businesses to the top of the Fortune 500.

"You know the updated adage," says Chris Lukas, CTO of emerging

technologies at Hold Brothers, a New York stock brokerage, "no one ever got fired for buying Cisco."

Yet nobody's perfect, as some users polled by *Network World* can attest. Here are some thoughts from die-hard Cisco customers on what their favorite network vendor could do better.

See Cisco, page 85

### Adding voice to VPNs

■ BY TIM GREENE

Putting voice on interoffice data trunks can cut toll costs and access line charges, and packing voice and even video into IPVPN links can do the same.

At least that's what Cisco is counting on. The V<sup>3</sup>PN software (pronounced V-cubed PN) the

company rolled out last week for its VPN routers tags voice and video traffic for preferential treatment as it crosses an IP service provider's network. Cisco joins Avaya and other vendors that offer voice support in their VPN gear.

Cisco says the voice over IP— See VPN, page 14

#### Money saver

Running voice over a VPN can save money, but there are other issues to consider before you buy into a converged network.

SOURCE: NETWORK WORLD 500 SURVEY 2002

#### Benefits

- Long-term cost savings.
- One network to manage.
- Reduced toll charges.

#### Drawbacks

- Getting proper quality of service.
- Immature standards.
- Voice quality.

L00

### Linux times 4

UnitedLinux effort seen as evidence of maturing market.

■ BY PHIL HOCHMUTH

In what might signal an end to the wide-open days of open source Linux, a band of second-tier Linux vendors last week vowed to meld their products into one UnitedLinux operating system they say will draw enterprise customers away from market front-runner Red Hat.

Caldera, Turbolinux, SuSE and Conectiva collectively will develop this common version of Linux, but the companies will market it separately. While analysts say the UnitedLinux effort could help independent software vendors (ISV) and resellers embrace Linux more quickly, some

**Linux digs in**  
IDC predicts big growth in the use of Linux servers.



users see the move as more of a marketing tactic by struggling companies.

A result of the open source movement has been a broad array of Linux distributions — more than 250 — that cover a variety of functions. Because Linux source code is free, anyone can download it and create a unique distribution — either general operating systems for PCs and servers, or targeted code for embedded systems, PDAs and game consoles (yes, there's a Linux version for Sony PlayStation).

Observers say serious interest in Linux as an enterprise server

See Linux, page 16

### Start-up looking to find faults

Network industry icon leads Premonitia into fault management market.

■ BY DENISE DUBIE

ACTON, MASS. — Cracking the crowded and maturing fault management market will be challenging for start-up Premonitia, but the company has a not-so-secret weapon in Chairman Paul Severino that at least will help get its technology noticed.

A network industry icon, Severino launched one-time Cisco router rival Wellfleet Communications in 1986 after starting Ethernet card maker Interlan five years earlier. Since leaving Bay Networks in 1996 (Bay was formed by the merger of Wellfleet and Synoptics in 1994), Severino has kept plugged in to the industry, investing in companies and serving on boards for start-ups such as PhotonEx and Sonus Networks.

Severino discovered Premonitia through his association with Rensselaer Polytechnic Institute (RPI), the Troy, N.Y., school where he earned an electrical engineering degree in 1969 and is now a trustee.

The company started a little more than a year ago,



**We are attacking the problems that the big guys don't see as significant enough to worry about yet.**

**Paul Severino**  
Chairman, Premonitia

though traces its roots to 1995, when a group of RPI professors working under a grant from the Defense Advanced Research Projects Agency started looking for shortcomings in network management technology. Their findings convinced Severino to contribute to the company's \$3.2 million seed funding and help the professors turn their research into a commercial

See Premonitia, page 10



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- **8** New services for less on tap at upcoming SuperComm event.
- **8 Extreme Networks** seeks to simplify switch management.
- **10 SAP** looks to invigorate U.S. sales.
- **12 Intel** rethinks InfiniBand plans.
- **12 Tivoli Systems** to introduce self-healing software.
- **14 Recent acquisitions** not necessarily a sign of things to come.
- **16** At user conference, **LightSand** comes out of stealth mode, **Brocade Communications** promises SAN partnerships.
- **18 Start-up** comes to the defense of wireless LAN users.
- **18 Microsoft Exchange** flaw exposed.

## Infrastructure

- **21** Linux becomes a workhorse.
- **21** Marines tackle paperwork with wireless LAN.
- **26** Hewlett-Packard launches AlphaServer family.
- **28 Dave Kearns:** Network managers unite!

## Enterprise Applications

- **31** IBM targets integrated applications.
- **31** Sun unties portal from apps server.
- **32 Scott Bradner:** 'Net radio update: Sanity may yet prevail.

## Service Providers

- **35** SBC Communications offering IP Centrex, DSL Centrex services.
- **35** Head of Web hosting at AT&T sees premium services as key to attracting enterprise customers.
- **37 Johna Till Johnson:** The business case for route control.
- **38 Special Focus:** Acquisitions of Digital Island and Exodus paying big dividends for Cable & Wireless.

## The Edge

- **41** Nortel extends next-generation SONET line.
- **41** Carriers: Innovation not at standstill.
- **42** Media server makes a difference for Z-Tel.
- **42** The Scoop: What is a media server, anyway?

## Technology Update

- **47** Web application firewalls protect data.
- **47 Steve Blass:** Ask Dr. Internet.
- **48 Mark Gibbs:** A better RSS reader.
- **48 Keith Shaw:** Pop-up stopper tops our test list.

## Opinions

- **50 Editorial:** The alchemy of route control.
- **51 Janice Roberts:** The network's vanishing edge.
- **51 Thomas Nolle:** Why is Cisco making money?
- **86 Backspin:** Four parts of the Privacy Apocalypse.
- **86 'Net Buzz:** Readers let HP know they don't find its TV commercial funny.

## Management Strategies

- **67** Setting up new employees: A variety of provisioning schemes speeds up the process of getting user accounts and other resources to new hires.

# NetworkWorld

## Features



Hewlett-Packard Procurve 9304m

## Searching for the QoS Holy Grail

Implementing quality of service in enterprise networks is becoming a necessity, so we tested five QoS appliances and two routers that boast QoS features. **Page 53.**

### The business case

Before you sign up for a WAN service, you need to know whether the service provider's business model is sound. In this special report, TeleChoice analyzes metropolitan Ethernet services. **Page 63.**

### Tester's Choice

Kenneth Percy on how to assess the management interface of your network hardware. **Page 64.**

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## Interactive

### Name of the game is integration at IBM

An in-depth Q&A with John Swainson, general manager of IBM's Application & Integration Middleware Division, covers the company's integration plans, WebSphere security, recent improvements in the software and more.

**DocFinder: 9637**

### Forum: HP and its view of married men

Does the company really think men are so stupid that they can't comprehend a shopping list? 'Net Buzz columnist Paul McNamara and plenty of others are irate at the company's depiction of men. Add your thoughts.

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### SuperComm news

Heading to Atlanta? Staying home? Either way, we've got you covered. If you're going to the show, check out our online planner of the keynotes, events and sessions. Or check out our breaking-news page from home.

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## Seminars and Events

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## Columnists

### Compendium

Managing your in-box the EZ way Fusion Executive Editor Adam Gaffin points you to a report on how to keep your e-mail under control. Rule No. 1: Keep your in-box empty.

**DocFinder: 9640**

### Help Desk

Private line or frame relay? Columnist Ron Nutter helps a reader who's trying to decide the best method for networking remote offices.

**DocFinder: 9641**

### Home Base

Avoiding the highway Columnist Jeff Zbar looks at the activity of the regional Atlanta telework group and its efforts to promote the telework practice.

**DocFinder: 9642**

### View from The Edge

Juniper gets DSL, Siemens channel from Unisphere buy. Edge Managing Editor Jim Duffy analyzes what the move means for the industry.

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# News Bits

## Microsoft, SEC reportedly settle dispute

■ The U.S. Securities and Exchange Commission last week voted to approve a settlement with Microsoft that will force the company to change its accounting reserve practices, according to *The Washington Post*. Microsoft has been using an accounting practice that the SEC says is misleading to investors — while not fraudulent — and SEC commissioners therefore voted in favor of an administrative action requiring Microsoft to “cease and desist” from the practice, the newspaper said, citing sources within the SEC. Microsoft has acknowledged the SEC probe in its annual report since 1999, the report said. The company has put aside some of its earnings to pad future financial results where they fail to meet expectations, *The Washington Post* said. The SEC has criticized companies using these “cookie jar reserves” for misleading investors.

## ICANN leader to step down

■ After only 14 months on the job, Stuart Lynn, CEO of the Internet Corporation for Assigned Names and Numbers, announced plans to retire from his post early next year. Lynn's resignation is the latest sign of disarray at ICANN, the nonprofit corporation that oversees Internet addressing and domain name issues. Controversial since its founding in 1998, ICANN has become mired in its own processes and can't support itself financially. In February, Lynn proposed a restructuring of ICANN that would increase participation by and funding from governmental bodies. A group of ICANN board members is exploring these and other options for reforming ICANN and will report on their findings at the group's next meeting later this month in Romania.

## HP, Sun workers to get forced ‘vacation’

■ Hewlett-Packard and Sun will close shop during the week of July 4 to save money. “Where required, sales, support and services organizations will have employees working to meet the needs of our customers,” an HP spokesman said last week. The “new HP” is the merged HP and Compaq. Several companies, including Sun and Compaq, shut down for that week last summer. HP was not among them.

## Nifty little Web sites!

We're talking really little here. WildMag's 256b.htm Compo is a competition to build Web pages or resources in 256 bytes or less. Meanwhile, gimp bills itself as the world's smallest Web site. Guaranteed eyestrain even on a 21-inch monitor, but fully functional games and even a Google searchbox all within a one-inch frame. Get this and other daily doses of tiny goodness in Compendium: [www.nwfusion.com](http://www.nwfusion.com), DocFinder: 9653.



## Good Technology looks to get around RIM

■ Angling to fend off a potential patent suit, Good Technology confirmed last week that it has filed suit against rival Research In Motion over a patent RIM holds on delivering wireless e-mail messages. In an apparent preemptive move, the start-up is asking a California court for a declaratory judgment, stating that it does not infringe on RIM's Single Mailbox Integration patent. The patent relates to how information is directed from a host computer to RIM's popular BlackBerry wireless devices. Good Technology employs similar technology in its wireless e-mail service and is asking the court for protection against a patent infringement claim.

## ■ The Good The Bad The Ugly



**For a good cause.** Aprisma Management Technologies recently raised more than \$1,000 at its NetWorld+Interop booth for the Cross Roads House, a charity for homeless people in Portsmouth, N.H. How did the company do it? It charged visitors a buck each to get their photos taken with stage performers from “The MANagement Show” taking place at its booth.



**Not just here.** Deutsche Telekom last week dispelled any notion that the telecom industry meltdown is confined to North America. The German carrier says it will axe 22,000 jobs (roughly 9% of its workforce) by the end of 2004 to help get its house in order.



**FBI follies.** A technical glitch in the e-mail tapping system used by the FBI hampered an investigation apparently linked to Osama bin Laden and raises privacy concerns, a privacy watchdog group said last week.

The system, DCS1000 (aka Carnivore), was supposed to capture e-mail from the target of the investigation, but also saved messages from other individuals, according to an FBI memo made public by the Electronic Privacy Information Center. Score one for the Carnivore bashers. ▶



DANIEL VASCONCELOS

## Lawsuit targets VeriSign mailing

■ Los Angeles law firm Weiss & Yourman last week said it has filed a class action lawsuit against VeriSign in connection with its alleged mailing of thousands of deceptive “expiration” notices. The complaint alleges that VeriSign violated California’s consumer-protection statutes by sending out domain name expiration notices that falsely implied that the recipient’s domain name was due to expire. The notices also implied that the only way to prevent this from occurring was to pay a \$29 “renewal fee” to VeriSign. The law firm asserts that payment of the fee actually transferred the domain name in question from its current domain-name registrar to VeriSign.

## Who controls ‘rights of way’?

■ Tired of butting heads with state and local governments over when and how they can dig up public streets and install high-speed connections, some broadband network builders are calling for the federal government to mandate a national system for obtaining permits. Meanwhile, some government officials say this process must be done on a local level to balance all the interests involved. This back-and-forth over rights of way — which is what permissions to install communications lines beneath public grounds are called — was the subject of a panel discussion last week sponsored by the Congressional Internet Caucus, a group of 170 Congressional members focused on Internet issues. “The issue ... demands national attention and a national answer,” said Martin Stern, co-founder of the Telecommunications Industry Rights of Way Working Group. However, a single, federal plan for granting rights of way won’t work, argued Marilyn Praisner, a council member of Montgomery County in Maryland, because conditions and costs vary dramatically across the country.

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# New services for less on tap at show

Multiservice, metro and MPLS products to be highlighted on show floor.

■ BY JIM DUFFY AND  
TIM GREENE

ATLANTA — Attendees at this week's SuperComm 2002 may be saying "Mmm" to themselves as they stroll the show floor, but it won't have anything to do with food. The three M's in this case refer to key themes at the show: multiservice, metro and MPLS.

Products targeted at these markets and applications will be pervasive as vendors try to entice frugal service providers to open their wallets in the name of new services, reduced costs, converged networks and bursted bottlenecks.

Start-up WaveSmith Networks will unveil an addition to its Distributed Node multiservice edge switch line designed for high-density central office switching of ATM, frame relay, TDM and IP/MPLS services. The DN 7100 provides 30G bit/sec of switching capacity and supports interfaces ranging from DS-0 to OC-48c.

The DN 7100 tops WaveSmith's DN product line and joins the DN 2100 and 4100, which are targeted at remote edge and medium-density edge applications, respectively. It doubles the port density of the 4100.

National data and voice carrier Global NAPs has purchased about a dozen DN 7100s and 4100s for locations across the U.S. The service provider is replacing 13 Marconi ASX-4000 switches with the WaveSmith products.

Global NAPs found the WaveSmith switches to be better equipped for the service provider's voice application, and of carrier-class caliber, says Vincent

Bono, vice president of engineering for Global NAPs. The ASX-4000s are data-optimized switches for the enterprise that Marconi obtained from its Fore Systems acquisition in 1999, he says.

For management of multiservice aggregation, Unisphere Networks will announce SDX-300B, a package of service and provisioning software tools for its MRX aggregation router and ERX edge router. Service providers can use SDX-300B software to share control of their network with business customers, letting customers turn new services on and off as the provider specifies.

For example, a carrier might offer an extra T-1 worth of bandwidth for free over a fractional T-3 link, and if the customer wants it, he can turn up the bandwidth directly.

Unisphere also will announce an OC-48 customer line card for the ERX and support for multi-link frame relay, multilink point-to-point protocol and T-1 bonding, all of which let businesses create larger logical access lines by combining smaller links.

Meanwhile, Unisphere competitor CoSine Communications will introduce software that lets its

IPSX 9500 service-processing switch mitigate denial-of-service (DoS) attacks before they reach business networks. Called DoS-Shield, the software screens packets in the service provider's network at the application layer and rate limit-specified applications, thereby limiting the impact of DoS attacks.

The software also can limit the impact a corporation's computers might have launching distributed DoS attacks should the machines be hijacked.

Multiservice optical access will get attention, as Iambda Networks plans to demonstrate its iAxelent platform. iAxelent lets carriers and service providers deliver data-centric services such as LAN interconnection, multisite connectivity, private networks/ VPN, premium Internet access, remote storage connectivity and video.

The system integrates the features of edge switches, aggregation routers, access routers and bandwidth managers into one access platform. It supports point-to-point, point-to-multipoint and ring topologies, and connects to ATM and TDM metropolitan/core networks, as well as next-generation Ethernet and IP/MPLS networks.

Iambda will exhibit the XL1000, a modular central office/point of presence concentrator, and the XL200 optical network terminators (ONT). The XL1000 performs distribution, aggregation and grooming of multiprotocol traffic. So-called service boards plug into the system to support passive optical network (PON), SONET/SDH and Gigabit Ethernet network interfaces, and enable simultaneous support of packet, frame, cell and circuit interfaces and services, Iambda says.

The XL200 ONT is a PON uplink that connects subscribers with the core network for access to IP, Ethernet and TDM services.

For the metropolitan market, Tropic Networks will unveil its TRX-24000 system, which is designed to provide SONET-like fault monitoring and management for wavelength services.

The TRX-24000 integrates optical add/drop multiplexing (OADM) and dense wavelength division multiplexing (DWDM) with an MPLS and Generalized MPLS control plane. Service providers can use the system to implement a transponderless or transponder-based network with SONET-like provisioning, assur-

ance and fault management, Tropic says. This lowers the cost of deploying a metropolitan OADM/DWDM system by half or more, the company says.

The TRX-24000 incorporates Tropic's Wavelength Tracker technology, which traces and monitors individual wavelengths as they traverse the metropolitan network, enabling management of optical signals without expensive optical-electrical-optical conversions or stand-alone optical test devices, Tropic says.

In WDM mode, the TRX-24000 supports one to eight wavelengths per fiber. In DWDM, it supports up to 32 wavelengths per fiber. Optical channels operate at 2.5G bit/sec and 10G bit/sec. ■



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## Extreme seeks to simplify switch mgmt.

■ BY PHIL HOCHMUTH

ATLANTA — Extreme Networks this week at SuperComm 2002 will announce software for simplifying the configuration and management of large numbers of its Gigabit Ethernet switches.

Extreme's Infrastructure Service Management (ISM) Provision could be used to configure quality-of-service (QoS) policies, update operating system software and control bandwidth on a per-port level across hundreds of Extreme switches in a multisite enterprise network using Ethernet over long-distance fiber or in a metropolitan-area service provider's network.

The offering, which runs on Solaris or Windows servers and is accessible by a Java-based or Web client, is available in two models — of the Network Infrastructure Manager (NIM) and IP Services Manager (IPSM).

Extreme's EPICenter and ServiceWatch management tools are installed at Scottsdale Insurance, in Scottsdale, Ariz., which runs a network of 26 Extreme BlackDiamond switches in multiple locations. But the insurance firm, which is a subsidiary of Nationwide Insurance, may look into the new ISM

Provision products as its network expands.

"Network management is a huge deal for us," says Tony Cognale, network technician at Scottsdale. "There are only two guys running the show here, and it's really important for us to be able to have automated management tools."

Cognale says he might have to look at more robust management tools as his firm begins to take on some service provider-like roles. Using IPSM to control how much bandwidth extranet partners can use is one possibility, he adds.

"I would absolutely look into [IPSM]," Cognale says. "We'll be deploying Web services out there to 300 of our general agents who will be coming directly into our systems. It would be nice to control how much of our bandwidth they use when they're on our network."

NIM can be used to schedule jobs for updating software and configuration settings across a wide array of Extreme boxes. The software lets users back up configuration job settings and restore systemwide switch configurations to earlier settings if errors are made. It also can be used to assign Layer 2 or 3 QoS priorities to certain kinds of traffic, and to check new QoS and network policy settings for conflicts with existing rules and settings on

switches. The software also can be used to manage inventory of Extreme equipment.

The IPSM module is targeted more toward carriers, and metropolitan Ethernet service providers could use it to allocate bandwidth to customers based on individual ports or virtual LAN (VLAN) groups. IPSM taps into the rate-limiting features on Extreme switches to let companies control how fast a particular port or VLAN transmits data — from 256K to 100M bit/sec or 1G bit/sec, depending on the port speed.

Extreme says both modules can save users time by letting them make multiple configuration changes through a graphical user interface on the application and distribute those changes to hundreds of Extreme switches.

The company says the software offers an improvement over existing switch configuration methods for software updates, VLAN and port speed configuration and QoS settings, which include connecting to switches on an individual basis via Telnet or a serial port connection and using a command line interface.

The ISM Provision software will be available this month. Pricing will be \$14,000 for the NIM module and \$30,000 for the IPSM module.

Extreme: [www.extremenetworks.com](http://www.extremenetworks.com)



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# SAP looks to invigorate U.S. sales

■ BY ANN BEDNARZ

ORLANDO — A new face as well as a new application strategy will be introduced to 8,500 attendees expected at SAP's user conference, beginning Wednesday.

The fresh face is Leo Apotheker, newly named president of global sales operations for SAP. Just in time to host the Sapphire conference, Apotheker also has assumed, temporarily, the helm of SAP America after the reassignment of Wolfgang Kemna. Kemna held the post of president and

CEO of SAP America for two years during a period of declining license revenue. His replacement was much anticipated by industry watchers as SAP attempts to increase its U.S. sales.

The application strategy SAP is expected to highlight revolves around so-called collaborative applications, which are lightweight, process-oriented applications that pool information from multiple sources — inside and outside of a company — to facilitate a specific task.

"These collaborative apps are

sort of mini apps that are not big-bang [enterprise resource planning] applications but provide a lot of functionality specific to certain business processes and cross different application and business boundaries," says Joshua Greenbaum, principal of Enterprise Applications Consulting. Instead of something as complex as "partner relationship management," a collaborative application might tackle "merger and acquisition" and pull together the business processes that go into a merger-and-acquisition scenario,

he says.

An SAP spokesman confirmed that collaborative applications will be a significant topic of discussion at Sapphire. The technology is being developed within the SAP business unit headed by Shai Agassi — former CEO of portal vendor and SAP acquisition TopTier Software — that combines formerly independent subsidiaries SAP Portals and SAP Markets (which were subsumed within SAP AG in April).

The collaborative applications will build upon mySAP Tech-

nology, an infrastructure platform SAP announced in November that combines a Web application server, an integration platform and portal technology.

The approach of delivering small, digestible software that can enhance existing SAP installations is what users are looking for, Greenbaum says. "SAP has a real ability to leverage its installed base in terms of a sales opportunity and go far with these collaborative applications," he says.

SAP also will demonstrate enhancements to its customer relationship management (CRM) software at the show, though officials declined to share specifics.

Like its ERP brethren, SAP is engaged in a heated battle for CRM sales with market leader Siebel Systems — which captured 18% of CRM license and services revenue in 2001 to SAP's second-place 8%, according to AMR Research.

Three years ago, SAP didn't even have the software to compete. Today, it has the technology but needs to overcome the perception that CRM is Siebel's market, Greenbaum says. "That needs to happen sooner rather than later because Siebel certainly is selling a lot into the SAP installed base and that's enormous revenue and opportunity lost for SAP," he says.

Kelly Spang, senior analyst for e-business applications at Current Analysis, agrees. "SAP needs to step up the momentum in terms of its marketing and messaging to the installed base," Spang says.

While Siebel rivals SAP, Oracle and PeopleSoft haven't caught up to Siebel in terms of pure CRM functionality; each can make a case for its application integration features, Spang says. SAP is starting to do more work to integrate its CRM modules with other SAP back-office applications, such as human resources and financials, which is something that Siebel, as a pure-play CRM vendor, can't offer without relying on outside partnerships.

These days, the integration message resonates with users who want to get more out of their existing IT investments, Greenbaum says. "Integrating CRM to the back office has been more mythological than real over the last few years," he says. "It has very recently gotten into the mainstream thinking of corporate customers." ■

## Premonitia

continued from page 1

product.

"Established companies tend not to take new approaches to an existing problem as seriously as a start-up does," Severino says. "The old way is mature. This is the new way ... That's the point."

The new way, says Premonitia CEO Peter Vicars, is the Network Early Warning System (NEWS), a hardware and software product.

"[Severino] is a technical visionary. It was [Severino] who saw the work being done at RPI and realized its applicability to large enterprise networks," says Vicars, now in the process of helping the company raise \$8 million as development continues.

Vicars pledges that NEWS will represent a "disruptive change" to the way faults, such as problems with routers, are managed. Premonitia says its offering will give customers what's missing in current offerings: advance notice of when faults will occur.

Vicars says that although competitors such as Smarts and Concord Communications claim to have "predictive" features, the difference is that Premonitia performs the analysis in real time, rather than depending on historical data. Like Smarts, Premonitia includes a knowledge base of known problems that can be quickly identified, but the company says it also can detect anomalies that are invisible to other tools.

Industry watchers say Premonitia will need something unique to survive in a market full of established companies such as Hewlett-Packard and Micromuse. "The concept of pure fault management is becoming a remnant of the past" and most vendors are working toward products that provide performance management features as well, says

### START-UP

### PROFILE: PREMONITIA

<b>Location:</b>	Acton, Mass.
<b>Founded:</b>	April 2001
<b>Primary product:</b>	Network Early Warning System, a fault management product that detects anomalies in network behavior to alert network operations of impending faults in real time.
<b>Key personnel:</b>	Paul Severino, chairman; Peter Vicars, CEO; Peter Dunbeck, vice president of marketing.
<b>Finances:</b>	\$3.2 million seed round in March 2001; currently compiling \$8 million in first-round funding. Principal investors are: Severino, Castile Ventures, Lazard Technology Partners and Marty Schoffstall.
<b>Competitors:</b>	Concord and Smarts.
<b>Fun fact:</b>	Co-founder and CTO Ken Vastola, a Rensselaer Polytechnic Institute professor and wine connoisseur, needed to ensure his 4,000-bottle wine cellar was transported properly in special crates from Albany, N.Y., to Acton when the company decided on a headquarters.

Paul Bugala, an analyst at IDC, which includes fault management in a network assurance market it estimates will increase from \$1.4 billion in 2001 to \$2.2 billion by 2006.

"The short of it is that it's hard enough for entrenched players, such as HP, Concord and Smarts, to make headway with current customers, so starting out new at this time is asking a lot of the company's sales force," Bugala says.

Although not familiar with Premonitia, Bugala says the company could make a start if its product addresses a niche not yet discovered by current vendors.

"Smarts started out with a simple algorithm and evolved its message to be more than a refiner of other vendors' data," Bugala says.

Severino argues just that. He says Premonitia with its RPI background discovered new algorithms that can determine a router's behavior in ways not yet done.

"We are attacking the problems that the big guys don't see as significant enough to

worry about yet," Severino says. "I try to find those spaces where it seems there's not a lot of activity going on and take the risk at introducing a new way of thinking."

Premonitia intends to have NEWS work in conjunction with potential competition such as HP's OpenView and Micromuse's NetCool products, but NEWS also will work independently of other management systems, the company says.

Richard Glasburg, director of data communications for the commonwealth of Massachusetts, says he's not sure there is a niche left for a new company. The HP and Concord customer says the goal for most network administrators is to "proactively tackle the problems and get the tools to do most of it for you."

"What can a new company do that's more meaningful than what a lot of companies are already doing?" he asks. "Hopefully, [Premonitia] understands something that's missing in the

industry or it just does fault better than everyone else."

One plus for customers choosing Premonitia products, Vicars says, will be the lack of custom configuration needed when deploying NEWS. Customers will install appliances called Detectors in equipment racks, often remote from the network operations center (NOC). The Detectors will essentially be SNMP collectors that poll network devices, such as switches, routers and servers. Detectors will be standard 1U (1.75-inch) Linux boxes that run Premonitia's Micro-Structure Analysis Software.

Management software, called the NEWS Warning Manager, will run centrally in the NOC to provide a single interface for configuration and reporting of events. The Warning Manager also contains Premonitia's Fault Knowledge Base, from which the specific fault type is identified and network operators are alerted.

Pricing will start at \$100,000. Beta testing is scheduled to start this fall. ■



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# Intel rethinks its InfiniBand strategy

Company cancels chipset production but still backs high-speed I/O technology.

■ BY JENNIFER MEARS

Intel's decision last week to cancel plans to ship InfiniBand chips in 2003 is causing some ripples in the market, but shouldn't be construed as a significant setback for the high-speed I/O switching fabric, industry observers say.

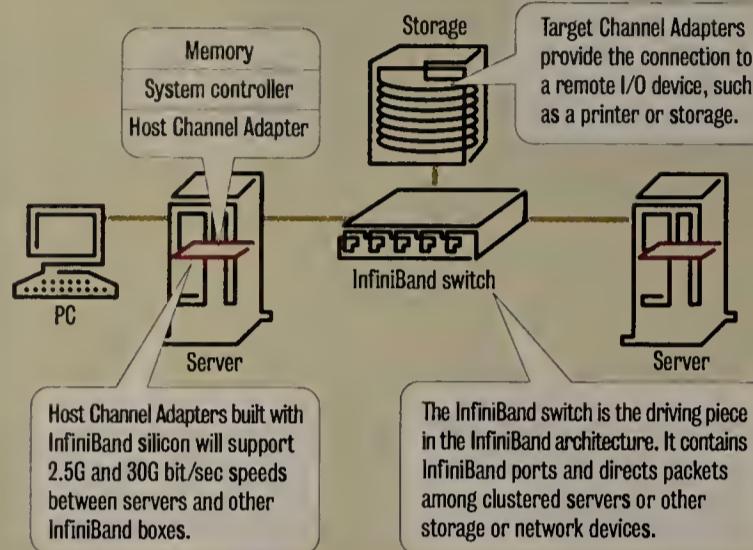
While some contend that Intel's news comes at a difficult time for InfiniBand as first-generation products are being delivered for testing, others say the development will do little to change the course of the market. The Yankee Group and IDC say their InfiniBand forecasts remain unchanged. The Yankee Group predicts that by 2005, 42% of all servers shipped will be InfiniBand-enabled; IDC pegs that number at 50%.

"There's been a perception ... that the sky is falling," says Jamie Gruener, a Yankee Group analyst. "That's not the case."

Nathan McQueen, systems architect at the University of Washington in Seattle, agrees. He says he's unfazed by Intel's decision,

## InfiniFast

**While Intel has stepped out of the production game, companies such as IBM and Mellanox still plan to roll out InfiniBand chips. Here's how the technology works:**



even though he has used Intel InfiniBand products in his testing lab for the past six months.

"It seems bad because everybody takes the [announcement] as gloom and doom, but it doesn't really alter the field that much,"

McQueen says. "In terms of how they're pulling back, the decision not to produce chips doesn't concern me because they've invested in some of these start-ups that are making chips."

Intel has investments in several InfiniBand companies, including Mellanox Technologies, which makes silicon, and Lane 15 Software, which makes management software.

"I don't see them going away from the leadership role they've taken in the steering committee or in the product development at all either," McQueen says. "They're still going to work with standards and do things like that."

Intel is a major force in the InfiniBand movement and was a founding member of the InfiniBand Trade Association along with Compaq, Dell, Hewlett-Packard, IBM, Microsoft and Sun. InfiniBand has been hailed as the fix for I/O server processing bottlenecks by providing connections between server, storage and network devices of 2.5G to 30G bit/sec. Current bus technology supports speeds up to 1G bit/sec.

More than 70 companies are expected to bring InfiniBand products to market. Delivery could begin later this year.

Allyson Klein, industry marketing manager for Intel's InfiniBand efforts, says that while Intel has decided not to ship a product, it remains "very committed" to the InfiniBand technology. Intel continues to sit on the InfiniBand Trade Association steering committee and supports InfiniBand

through initiatives such as its InfiniBand interoperability lab and its product development kits.

Intel decided against shipping the Host Channel Adapter (HCA) modules, which sit in InfiniBand-enabled servers to direct packets to InfiniBand switches for delivery to and from remote devices, in order to "refocus our efforts on our core business, specifically server chipsets," Klein says.

Intel is focusing on PCI-Express, formerly called 3GIO, and is making that an open interface to give components such as InfiniBand HCAs direct access to Intel chipsets, Klein says.

In the meantime, companies such as IBM and Mellanox are focused on delivering HCAs. The companies are working on delivering a 10G bit/sec InfiniBand chip, while Intel was focused on the 2.5G bit/sec version.

That may have influenced Intel's decision to step back, some analysts say.

"Intel was way behind in product. There are plenty of others who are much further along, like IBM and Mellanox," says Steve Duplessie, an Enterprise Storage Group analyst. "[Intel] didn't stop supporting InfiniBand; they simply recognized that others were beating them to the punch with [faster] technologies."

Regardless, momentum behind InfiniBand continues. Dell recently announced a partnership with Microsoft to develop InfiniBand technology and will incorporate InfiniBand into its brick servers next year.

Venture capital also has been flowing. In the first quarter, InfiniBand companies InfiniCon, Mellanox, Voltaire and Omega-Band received a total of \$101.7 million in funding. Mellanox secured the bulk of that total, getting \$56 million in a third round of funding.

Ashley Leeds, a partner at Baker Capital in New York, says Intel's move doesn't change her views on the prospects for the emerging technology. Earlier this year, Baker led a \$13.2 million round of investment in Voltaire, which makes an InfiniBand-enabled switch/router.

"There is no single player, even a large one like Intel, that can really make or break this market. It's not good news, but it's not something that's keeping me up at night," she says. ■

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# Self-healing software on the way from Tivoli

■ BY DENISE DUBIE

WASHINGTON, D.C.—Tivoli Systems at its annual user conference this week will unveil "self-healing" software the company says not only monitors middleware servers and applications, but also determines and administers the cure for any problems that might occur.

Tivoli will unveil software tools to help users manage middleware servers such as IBM's MQ products and applications from companies such as SAP and Siebel Systems. To achieve the self-healing nature of the software, Tivoli wrote code that helps the software identify common problems and weaknesses in middleware, databases, Web infrastructures and applications. Typically network administrators would have to write rules, or configure the software, to watch for thresholds specific to their networked environments.

While competitors BMC Software, Computer Associates and Hewlett-Packard also monitor those types of products, Tivoli says the IBM Tivoli Monitoring software benefits from IBM's autonomic computing initiative, dubbed Project eLiza. Project eLiza is IBM's plan to create self-managing, self-configuring and self-healing servers that require little human intervention.

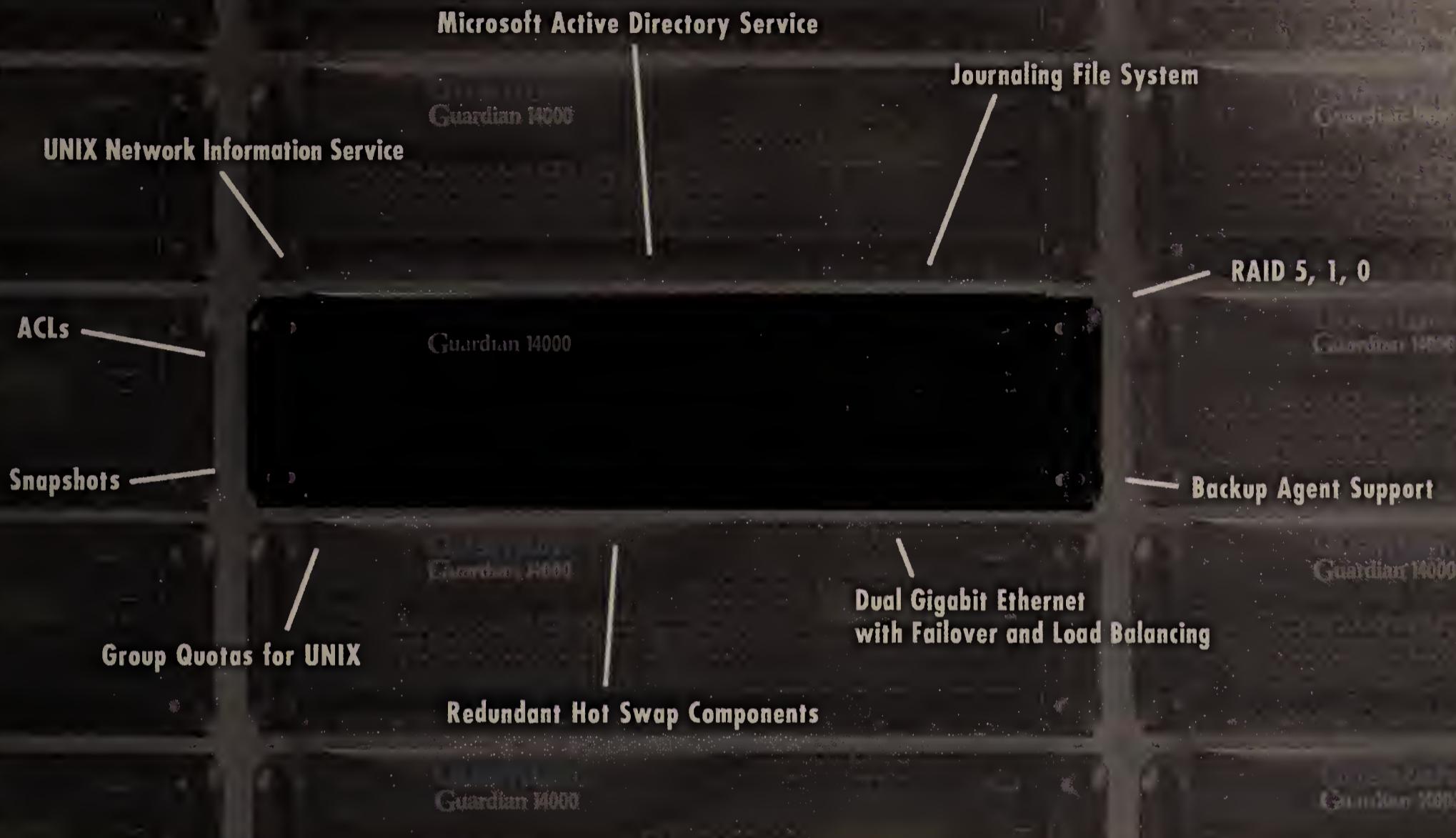
"The software is getting smarter," says Jasmine Noel, an analyst with Hurwitz Group. "Instead of the software simply monitoring for up or down status, it will perform some analysis and tell administrators what's wrong, where and how to fix it."

The monitoring software sits on the server with the middleware, database or application it's monitoring and works in conjunction with the IBM Tivoli Distributed Monitoring package. Administrators access data and receive alerts via a central management console.

Available now, the IBM Tivoli Monitoring software products start at \$500 per processor and scale up to \$1,500 per processor.

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# LightSand to debut at Brocade conference

Start-up to connect SANs over SONET; Brocade expands partnerships.

■ BY JENNIFER MEARS

LAS VEGAS — Start-up LightSand Communications this week will emerge from stealth mode and announce switches that let users connect storage-area networks over high-speed SONET backbones, promising to protect the integrity of data and speed its delivery over long distances.

LightSand will make the announcement at SAN product maker Brocade's user conference in Las Vegas. For its part, Brocade will make a slew of partnership announcements, all centered on providing the services and support businesses need to deploy and manage SANs.

LightSand, founded in 1999, is introducing the S-2500 and S-600 SAN extension gateways, which

are designed to let businesses connect SANs over SONET networks. The systems would improve the performance of applications such as remote disk mirroring, disaster recovery and remote back-office applications such as those from Oracle or SAP, the start-up says.

LightSand's products are based on the company's OPX chip, which is a multiprotocol switching device that supports Fibre Channel, Gigabit Ethernet and SONET. OPX supports Fibre Channel over SONET and Fibre Channel over IP networks. It supports 100M byte/sec Fibre Channel links at distances up to about 3,700 miles.

The company says its products are an alternative to an all-IP storage environment.

PROFILE: LightSand	
<b>Headquarters:</b>	Milpitas, Calif.
<b>Founded:</b>	November 1999
<b>Products:</b>	S-600 and S-2500 SAN extension gateways
<b>Financing:</b>	\$28 million from institutional and private investors. Major investors include Barings Private Equity Partners and Fremont Ventures.
<b>Employees:</b>	28

"If you try to move a lot of data over an IP infrastructure you have issues because it drops data," says Andy Helland, director of product management at LightSand. Those issues can be addressed using TCP, he says, but that results in increased network latency.

"What ends up happening is throughput slows down because

you have to constantly retransmit any packets that are dropped along the way. So the secret if you have to move lots of data is never to drop them in the first place," Helland says. "SONET doesn't drop data."

Fibre Channel over SONET is a good choice for carrying Fibre Channel data because it provides

low latency and high bandwidth and is available from many carriers at rates up to 2.5G bit/sec, the company says.

The S-2500 supports speeds of 2.488G bit/sec over OC-48c networks and the S-600 supports up to 622M bit/sec over OC-12c/STM-4c. The products, which have not yet been priced, are expected to ship in the fourth quarter, the company says.

The idea, LightSand says, is to preserve and physically extend the full integrity of the SAN fabric over long distances, effectively combining geographically separated SANs into one SAN system.

LightSand's switches are geared for organizations moving large amounts of data between storage locations, such as companies

**See Brocade, page 85**

## VPN

continued from page 1

over-VPN technology will let businesses set up telecommuter offices with IP phones that have full, corporate IP PBX features and a secure data link back to corporate network resources. Such offices would require a Cisco IP phone, a PC and a Cisco VPN router. Corporate sites would require a Cisco VPN gateway router and Call Manager IP PBX software.

To guarantee the low latency that voice and video require, V<sup>3</sup>PN gear will tag voice and video packets as high priority using type-of-service bits that will be displayed as part of the IP-Security header sent across the network. This type of service designation then will be recognized by all Cisco network devices between the source and destination.

One possible drawback is that to take advantage of the new capability businesses must purchase IP WAN service from a provider with Cisco Powered Network Multiservice VPN certification. So far Sprint is the only certified provider.

But if that problem can be overcome, VoIPVPN can reap rewards. Consider this: Matrix Resources, an IT talent agency in Atlanta, is migrating from a voice-video-data ATM network among its five sites to one Cisco-based VPN that handles all that traffic. The VPN costs

about a third of what the ATM network costs per month, says Les Peterson, telecom analyst for Matrix.

When a business puts voice over a packet network, running a separate voice and data networks isn't necessary, which means less equipment to buy, manage and maintain. The company also needs only one set of network data services, and rates for data services — particularly for links to other countries — are generally less than those for voice.

Nevertheless, even if the technology is truly parallel to voice over frame relay, it won't become very popular, predicts Rosemary Cochran, an analyst with Vertical Systems Group. After being

around for more than five years, voice over frame relay was used on only 4.4% of the 1.2 million frame relay ports in the U.S. as of the end of 2001, Cochran says. By contrast, it was used on 9.8% of the 546,000 frame relay ports in other countries, where the potential savings over traditional phone service are much greater.

IPVPNs, though, may have some advantages over frame relay networks when it comes to carrying voice. With VPNS, businesses don't have to pay for virtual circuits among all the sites they want to mesh, as is the case with frame relay and ATM. And if businesses choose dedicated lines, they have to pay for actual circuits. Because an IP VPN is routed, there are no

virtual circuits, and any site can connect with any other site as long as they all have access to a common IP network.

Also, as corporations try IP voice on their LANs, they will become more comfortable with the technology, says Jim Su, a senior product manager for WAN and VPN gear at equipment vendor Avaya, which makes VPN boxes that also handle voice. That will make them more willing to try voice over their IP WAN, he says. "The primary issue is the public network. If your traffic spans across multiple providers' networks, you can't get the quality of service you need," Su says.

In practice, a high-grade IP service will support voice over an IPSEC VPN, say Peterson and Doug Haluza, director of engineering and new technology for Lexent, a New York firm that builds carrier and corporate networks. They use Cisco voice-over-VPN gear on AT&T's and Qwest's IP networks, respectively. These networks do not have the Cisco multiservice designation.

A major hindrance to adoption of IP voice on VPNS may be fear of making the wrong choice because the technology is relatively new, says Zeus Kerravala, an analyst with The Yankee Group. "The biggest fear is if you run voice and video over it it won't work right, and all the IT guys will get fired," he says.

For those too timid to try it themselves, some carriers are pro-

viding the service. Masergy, in conjunction with integrator Guardent, offers a managed voice-over-IPSec VPN service. Sprint has the Cisco multiservice designation and supports IP voice over VPN, although customers manage their own gear. Equant says it looked into it and found that it is technically feasible, but offers no such service yet.

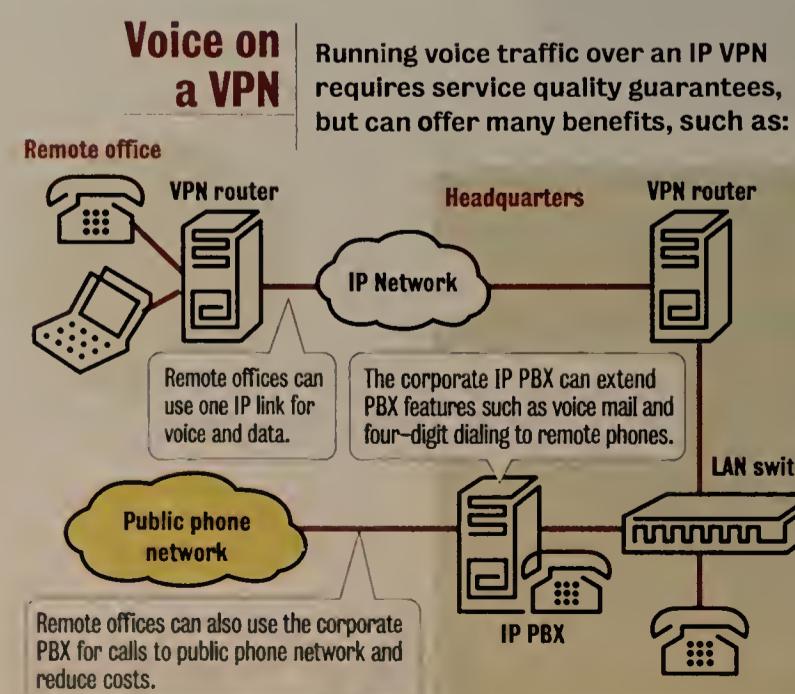
Some businesses may be attracted by the fact that the voice traffic is encrypted by virtue of running on the VPN, but most will not, says David Passmore, research director for The Burton Group.

The encryption is just a bonus, Haluza says. "There's no penalty for encrypting voice. It would be more difficult not to encrypt it," he says.

IT executives that decide to try VoIPVPNs should make sure their networks are redundant. Haluza says he uses redundant VPN routers and redundant IP PBXs and has his IP link backed up with an ISDN primary rate interface line.

Peterson says his sites are connected to Qwest via a dedicated circuit that is backed up by a DSL link to another ISP.

Cisco's V<sup>3</sup>PN software is available now on Cisco 1700, 2600, 3600, 3700, 7100, 7200 and new 7400 VPN routers as part of the company's IOS software. ■





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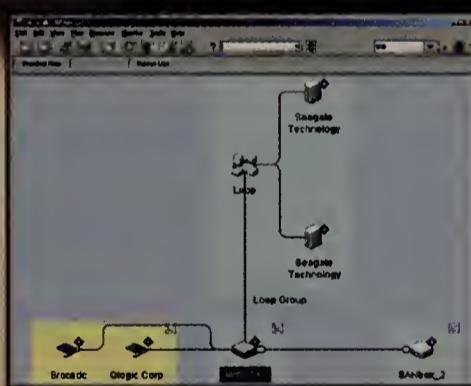
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**Linux**

continued from page 1

platform might be a driving force behind the consolidation effort. The reasoning goes that few IT executives would be willing to research even 10 of the top Linux flavors to find the right one for their data center.

UnitedLinux is expected to be available in the fourth quarter, and will run on Intel's 32- and 64-bit architectures, and IBM's z-Series, iSeries and pSeries mid-range and mainframe computers.

All Linux distributions are built around a common, open source kernel, which acts as the heart of the operating system. Developers add software modules and other patches of code, such as installers, drivers and interfaces — some of which are proprietary — to make a whole working operating system.

The four companies involved with UnitedLinux say it will be based primarily on SuSE's server version and will incorporate device drivers, clustering utilities, administration tools and language-support options from all of the companies. SuSE will handle most of the integration work.

"The focus of UnitedLinux is on business customers," Caldera CEO Ransome Love said during a conference call with media and analysts last week. He said the initial release will be for enterprise servers. There are no plans for a retail version for PC users.

According to Love, UnitedLinux source code will be made freely available under the GNU Public License, the common open source licensing model that lets customers access source code and grants permission to install software on multiple machines. Executable versions of UnitedLinux pricing will be determined by each company.

UnitedLinux is the most ambitious in a recent string of efforts to make Linux more of a standardized, enterprise-ready operating system. Others working to make Linux more standardized and stable for enterprise use include the Linux Standards Base (LSB) and the Open Source Development Lab (OSDL), both of which are loose consortia of Linux distributors. LSB and OSDL have had moderate success in making the Linux kernel faster, more scalable,

## United they code

**Four Linux vendors have banded to develop UnitedLinux, a common operating system each company will market under its own brand name. Participants include:**

- **Caldera:** The second-most-popular U.S. Linux company next to Red Hat. Offers Linux/Unix integration tools along with a version of Unix based on its acquisition of The Santa Cruz Operation.
- **Conectiva:** A Brazilian Linux company with an installed base mostly in Latin America.
- **SuSE:** A German company with a Linux version popular in Europe. Has partnerships with Oracle and SAP.
- **Turbolinux:** A Japanese company whose Linux version has advanced clustering and failover features. It is used widely on workstations.

resistant to crashes and easier for writing compatible applications.

Love says UnitedLinux could be seen as a commercial product borne out of the efforts of LSB and OSDL.

The need to make Linux more standardized has been an issue for years, as open source developers and IT vendors have tried to prevent a Unix-like fracturing of the operating system. In the Unix market, server vendors tied their versions of the operating system to proprietary hardware, which forced ISVs to port to each Unix flavor. A similar development was emerging with Linux, observers say, as the growing number of distributions was making it difficult for ISVs to choose among them.

While the UnitedLinux effort appears to be aimed directly at Red Hat, the company's response was diplomatic.

"Too many distributions hamper the migration of applications to Linux, so if this effort by Caldera and others consolidates distributions, it is a good development," says Mark de Visser, Red Hat's vice president of marketing. "But in Linux, application support is everything.... Time will tell if the [UnitedLinux] group's distribution will achieve the same level of support" that Red Hat offers.

Industry watchers say UnitedLinux will be good for users and better for companies looking to port software products to Linux.

"It's not a bad thing to reduce the number of players and have consolidation. Each of these companies served a niche market in terms of region or functionality," says Chad Robinson, senior research analyst with the Robert Francis Group. "Mergers are inevitable and this is the first merger in the open source environment," he says, adding that a combined Linux version will make it easier for IT executives to standardize on one system.

pany has about half to two-thirds of the U.S. installed base for Linux servers. The UnitedLinux partners collectively account for about a quarter of the market.

Linux users appear less enthusiastic about the initiative.

"I don't see how this will really help end users, per se," says Maurice Smiley, senior systems administrator at Gulf State Engineering, a Houston company that designs equipment for the oil and gas industries. "This sounds like just some Linux companies getting together looking to get a bigger piece of the pie."

Smiley runs Red Hat Linux on all the company's Web, file and print servers, but is familiar with the versions of Linux offered by the companies involved with UnitedLinux.

Any Linux flavor is still Linux at the core, he adds.

"They all ship with the same packages for the most part, give or take some special software they throw in to use with their distribution," he says. "But it's the same Telnet program on Caldera as on Turbolinux and Red Hat. The only difference that separates the two is how to install software on those different distributions."

Linux user Paul Watkins, a network analyst with home-storage products manufacturer Newellco

Rubbermaid, also will be watching how UnitedLinux develops.

Watkins runs SuSE Linux as a virtual server image on an IBM S/390 mainframe and uses the server to run a network monitoring application called Multi-Router Traffic Grabber, which watches over Rubbermaid's Cisco-based infrastructure. Intel-based Red Hat Linux also is used on some parts of the network, along with Windows 2000, for some Web, file and print serving.

"As long as IBM is supporting [UnitedLinux] it's fine with me," Watkins says. UnitedLinux will include support for IBM mainframes. While Watkins says the idea of combining multiple Linux distributions into one product seems interesting, it won't change what he uses Linux for or sway him to use one distribution over another.

"All the applications I've downloaded have pretty much been able to run across the board, regardless of the distribution," Watkins says. "Maybe there are [applications] optimized for one over the other, but for all of what I have, I've been able to go with Red Hat or SuSE — [they are all] really just Linux at the root." ■



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## Little M&A activity expected

■ BY MICHAEL MARTIN

Despite the acquisition activity over the past few weeks from Cisco, Juniper Networks and Alcatel, experts say the industry isn't about to return to the wheeling and dealing of 2000. Nor do they envision a bargain-buying binge by the bigger players.

"We're not going to see any major purchases, because the capital's just not there," says Chris Nicoll, an analyst with Current Analysis. "But there's always some [merger and acquisition] activity going on."

The Juniper and Alcatel purchases involved carrier-class products, while Cisco's two acquisitions were small outfits whose offerings gradually will be rolled into the network giant's product lines. Typically, it takes at least a year before larger vendors such as Cisco fully incorporate smaller firms' products into their portfolios, Nicoll says, so enterprise customers are unlikely to see any quick benefits.

None of the recent deals would qualify as blockbusters by 2000's standards.

The biggest, Juniper's purchase of Unisphere Networks from Siemens, totaled \$740 million. The deal appears to be a solid move for Juniper, Nicoll says, because Unisphere's edge routing products should be a nice complement to Juniper's core networking boxes.

"This was a case of a company hoping one plus one will equal three," he says.

Alcatel's announced intent to purchase VoiceXML

maker Telera last week for \$136 million, and Cisco's acquisitions of software manufacturer Hammerhead Networks and ASIC builder Navarro Networks, for a combined \$258 million in stock, fill small holes in the respective companies' portfolios, Nicoll says.

Bob Horstmeyer, a partner in Alliant Partners, the investment banking arm of Silicon Valley Bank, says merger and acquisition activity in most of Alliant's sectors, which include enterprise software, semiconductors, life sciences and electronic systems, is starting to show signs of picking up. Alliant specializes in deals worth between \$10 million and \$100 million.

The one area showing no renewed life is telecom. "It's just terrible right now," Horstmeyer says.

Horstmeyer isn't sure the telecom sector will pick up any time soon.

"The RBOCs seem to have won, and things are going to be like they were before competition came in 1996," he says.

That means longer request-for-proposal periods for telecom equipment suppliers and longer lab trials. Given the lengthier sales process, it's unlikely large equipment suppliers will be under pressure to purchase smaller firms for specific pieces of technology so they can roll out their products more rapidly.

While things are looking up outside the telecom sector for Alliant, Horstmeyer says that isn't the case for large merger and acquisition deals.

"That area is looking completely dead right now," he says. ■

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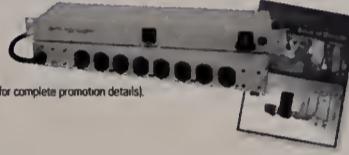
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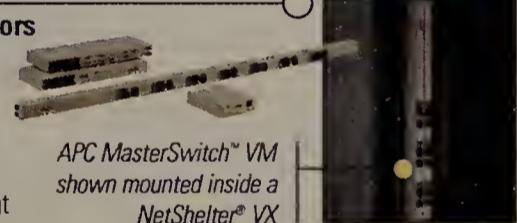
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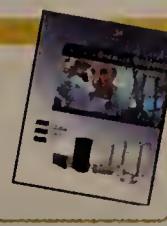
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# Start-up comes to the defense of wireless LAN users

■ BY JOHN COX

ALPHARETTA, GA.—Start-up AirDefense is taking a novel approach to wireless LAN

security: building the radio equivalent of a radar screen that can pick up wireless intrusions and then sound alarms.

The company's technology is designed to

protect against notorious vulnerabilities in wireless LANs, including its much-maligned wired equivalent privacy protocol.

The AirDefense system consists of distrib-

uted radio-based sensors — initially software running on Windows laptops, eventually in the form of appliances — which sniff for unauthorized access points, read wireless packets and assess access point vulnerabilities. These sensors, which use algorithms and a database of wireless LAN information to detect any changes to a network and analyze them, feed information back to a management console to let an administrator take action.

A policy management program lets administrators define a set of security attributes for each wireless access point and apply them automatically.

"It's the most comprehensive wireless security solution on the streets today," says Pete Lindstrom, director of security strategy for Hurwitz Group.

Many wireless security products focus on just one or two problems and still are oriented largely toward centralized, wired networks, he says.

Lindstrom says the stand-alone sensors will differentiate AirDefense from other vendors that sell wireless LAN security products based on laptops or handhelds with which administrators must wander around.

The company was founded about a year ago by Jay Chaudhry, who previously started SecureIT (which was bought by VeriSign), CipherTrust and Air2Web.

The laptop version of AirDefense will start at \$9,000. Loaded in a rack-mountable server, it will start at \$25,000. Specific pricing and availability information was not disclosed regarding the stand-alone sensors.

AirDefense: [www.airdefense.net](http://www.airdefense.net)

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## Microsoft Exchange flaw exposed

■ BY IDG NEWS SERVICE

REDMOND, WASH.—A "critical" flaw in Microsoft's Exchange 2000 e-mail server could let an attacker send a message that could consume all the server's processing resources, according to a security alert Microsoft issued last week.

The company has released a patch to fix the problem (see [www.nwfusion.com/DocFinder:9647](http://www.nwfusion.com/DocFinder:9647)). The flaw comes as a result of a problem in the way Exchange handles received mail that contains malformed attributes in a number of standard e-mail areas, including the "To" and "From" lines, Microsoft said in its alert.

A specially crafted e-mail can be made that will force the server to use all its processing resources to handle the message using the Exchange Store Service, thereby denying service to all other messages and actions running on the server, Microsoft said. ■



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# Infrastructure

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## Linux becomes a workhorse

### Takes

■ BY PHIL HOCHMUTH

**■ Neoteris** last week took the wraps off the latest version of its **Instant Virtual Extranet** appliance, which adds support for terminal applications such as Telnet, native support for messaging programs such as Microsoft's Outlook and Lotus Notes, and access to Web-enabled applications that use Java clients to run. IVE is designed to be an alternative to VPNs for companies that don't want to install the software and manage the configuration and administration of a VPN, the company says. The IVE box can replace a VPN by acting as a proxy server and granting authorized users access to their files, shared folders and applications via a standard Web browser. The box is placed between the corporate network and the Internet, and receives all user requests for file, share and Web-enabled applications. It then routes those requests to the proper systems and returns the data to the user through the Web browser. Because the application uses a browser, there is no need to install a client on remote PCs. Support for Web-enabled applications that use Java applets also has been expanded in IVE 2.0, letting the box offer access to applications from companies such as Oracle and SAP. IVE 2.0 will be available June 7. A starting price of \$10,000 will give file and Web access to 50 simultaneous users. [www.neoteris.com](http://www.neoteris.com)

**■ New software from Electric Pocket** lets users send annotated picture messages and photographs from **Pocket PC** and **Palm OS** handhelds to any e-mail address or to a mobile telephone that supports the emerging multimedia-messaging service standards. Users import images into the **Pixer** software or select from a big template collection of business stationary, images and even cartoon characters. Using the handheld's screen and stylus, users can add notes or comments, and send the resulting file to an e-mail address. Retail price is \$30, including 50 message templates. [www.electricpocket.com](http://www.electricpocket.com)

While Linux got its start in many companies as a departmental file-and-print or Web server, sometimes under the radar screen department of the CIO, many large corporate IT departments now use Linux as the cornerstone operating system for core business applications.

This role-change for Linux was spurred partly by large server vendors such as Dell, Hewlett-Packard, Compaq, IBM and NEC, which have become Linux's biggest cheerleaders. While the goal of these companies ultimately is to sell a lot of Linux, the vendors also are involved in the development and strengthening of Linux for use with large-scale enterprise applications.

Lots of research money and man-hours from system vendors has resulted in a stronger Linux, observers say. And as a

result, Linux is catching the eye of big business.

Reuters Group has ported its flagship Reuters Market Data Systems (RMDS) applications to Linux and Intel-based servers from HP RMDS, which provides financial services customers with real-time market data, financial news and market research statistics, was previously a Sun Solaris application, running on Sun's SPARC servers. Demand from Reuters customers for a Linux-based RMDS is what forced the switch, says Mark Hunt, global director of enterprise product marketing at Reuters.

Hunt says Linux technology has been of interest to financial firms for some time but Reuters customers only seriously started considering the technology as system vendors HP and IBM began announcing successful customer Unix-to-Linux migration

projects — such as Amazon.com, Boeing Shell and L.L. Bean.

Hunt says the goal of saving money in a down economy has been another major factor in the increase in Linux interest at financial firms.

"A lot of these [financial] institutions are looking to get more mileage out of budgets, and Linux is one way they're doing that," Hunt says.

According to Hunt, some customers with which Reuters works expect to see cost savings of about 40% on hardware by using RMDS on Linux and Intel instead of Sun's server platform.

With Linux, Hunt adds, "it's not like [customers are] changing out their whole platform to something completely different," because Unix and Linux are very similar and are based on open protocols and sim-

See **Linux**, page 26

## Marines tackle paperwork with wireless LAN

■ BY JOHN COX

The U.S. Marines are famous for bringing everything they need with them to a hostile beach. Now they've begun bringing their networks, too.

Wireless LANs and rugged handheld computers are starting to make it easier for the Marines to track everything from office furniture and multifuel survival stoves, to machine guns and armored amphibious landing craft.

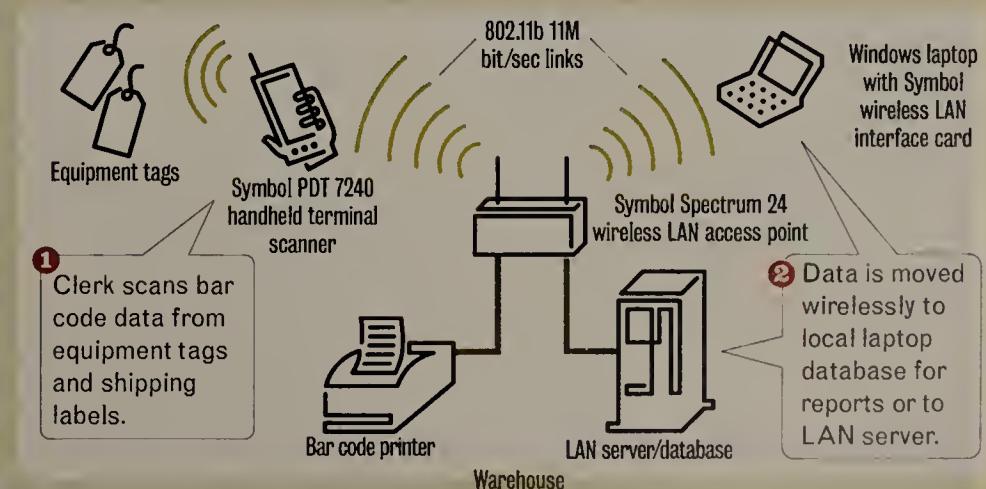
The Marines have deployed a little more than 2,000 Spectrum24 wireless LAN access points and ruggedized handheld computers with built-in bar-code scanners, all from Symbol Technologies, as part of the Automatic Identification Technology (AIT) project. AIT is a first step in turning the military's notorious morass of paperwork into digitized data (see graphic) and a more automated inventory control system.

"The rationale is to get rid of human error," says Capt. Gary Clement, AIT project officer with the Marine Corps Systems Command in Quantico, Va. Errors are easy to introduce when filling out paper forms. And they're compounded when inventories are conducted daily, as at Marine armories.

Another benefit is making these equipment checks much faster. "We haven't done any formal studies, but we know it's

### The Marines way

**The U.S. Marine Corps is moving to digitize its massive paperwork load with a portable wireless system known as Automatic Identification Technology (AIT). AIT includes two wireless access points, handheld computers with bar code scanners, a printer and laptop — everything to set up a small wireless LAN quickly.**



saving time," Clement says.

### The suitcase

The project office has created a system that packs into a padded metal suitcase and can be lugged anywhere. Currently the wireless LAN is 802.11, which uses the older 2.4-GHz frequency hopping radio, with a data rate of 2M bit/sec. At the time of the competitive bid for AIT, 11M bit/sec

802.11b products were not available. The Marines are looking ahead to upgrading to 802.11b because that is now a widely deployed industry standard.

The suitcase holds one wireless LAN access point and two of the Symbol PDT 7240 handhelds, which look like big, sawn-off automatic pistols with a computer display about the size of a paperback glued

See **Marines**, page 26

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# HP launches AlphaServer family

■ BY TOM KRAZIT

Hewlett-Packard last week announced a range of servers and PCs aimed at users who need high-performance transaction-processing machines.

New versions of the AlphaServer family include the AlphaServer DS20L server and the AlphaServer SC20 supercomputer. Two new Evo desktops for business customers also were released, the Evo D510 Desktop and the Evo D310 Desktop, which feature Intel's new 845G chipset. HP also released two versions of the Evo Notebook N800, one for corporate users and one for small businesses and consumers.

The AlphaServer family now has been updated under its third owner. Compaq acquired the Reduced Instruction Set Computing (RISC) technology that powers the DS20L and SC20 when it bought Digital Equipment in 1998.

RISC microprocessors are designed for intensive computing

applications, such as detailed graphics or research and development. Each processor is limited in the number of instructions it must undertake, letting it perform those limited tasks much faster than ordinary microprocessors.

The DS20L and SC20 are targeted at users engaged in "high-performance technical computing," says Rich Marcello, vice president of the Alpha systems division. HPTC users include life sciences companies, which would use the machines for intense computational processes, he says.

Each DS20L server comes with two 64-bit Alpha processors and features up to 2G bytes of memory. A system with 512M bytes of memory and 18.2G bytes of disk storage has an estimated price of \$18,000, HP says. The DS20L is 1U (1.75 inches) high, 19 inches wide and 20 inches deep, letting space-conscious businesses place up to 40 DS20L servers in a 6.5-foot-high rack-mounted configuration, the company says.

"We're packing a lot of power

into a 1U module, which will appeal to companies with limited area," Marcello says.

The SC20 is made by combining DS20L units, which can scale to a maximum of 128 DS20L servers or a total of 256 Alpha processors. It will come with a base system of eight Alpha processors and 4G bytes of memory and is estimated to cost \$290,000 when it ships in August, HP says.

Both systems run HP's Tru64 Unix, and the DS20L also is available with the Linux operating system. The new systems won't run on OpenVMS, as they are targeted at the telecom and HPTC markets, where HP doesn't have enough VMS customers for a VMS version to make sense, Marcello says.

Compaq announced in June 2001 that it would transfer its 64-bit servers to Intel's Itanium microprocessors by 2004, before HP signaled its intention to buy Compaq. HP will honor the Compaq road map for the Alpha microprocessor, and Alpha users can expect improvements and

support for the rest of the decade, he says.

The new Evo models use the Intel Extreme Graphics technology, which lets users experience graphics performance comparable to that of a common 32M byte graphics card, without having to purchase the card, HP says. The Evo D510 models will feature Universal Serial Bus 2.0 technology, which allows for faster data-exchange rates between desktops and other hardware, such as digital cameras and portable music players. Available early next month, the Evo D510 will cost about \$770 with an Intel Celeron processor or about \$900 with an Intel Pentium 4 processor.

HP will place an Intel Pentium 4 processor inside the D510 Ultra-Slim computer, which measures 2.72 by 12.4 by 12.83 inches, is priced at \$810 and also will be available next month.

The Evo D310, available immediately, carries the lowest price of the new PCs, at \$750 with a 1.7-GHz Intel Celeron processor,

128M bytes of Double Data Rate Synchronous Dynamic RAM, a 20G-byte hard drive and Intel's 845G chipset with Intel Extreme Graphics. It is designed for business users who only need basic features in a PC, HP says.

Corporate notebook users also will have a new machine to choose from within HP's N800 series, the N800-C, which will feature a three-year warranty and increased support, HP says. The N800-B, for small-business users, comes with a one-year warranty. Base specifications for the two machines, priced at \$1,710, include a 1.6-GHz Intel Pentium 4-M processor, 256M bytes of memory, a 20G-byte hard drive and ATI Technologies' 32M-byte Radeon graphics card. Wireless users can purchase the Multiport module, available in a Bluetooth version for \$130 and an 802.11b version for \$190.

*Krazit is a correspondent with the IDG News Service's Boston bureau.*

## Linux

continued from page 21

ilar technology. So far, Reuters has installed Linux-based RMDS at Merrill Lynch and is working with several other large brokerages and financial firms on similar rollouts.

"I think Linux has moved from kind of a niche marketplace to be seen as more of a workhorse operating system," says John Hall, president of the nonprofit group Linux International, who's been associated with Linux development for more than 10 years. Hall says this shift is because "a lot of high-availability projects have been going on lately" with Linux and large system vendors.

He says contributions from firms such as IBM and SGI have resulted in improvements in Linux storage volume management, symmetric multiprocessing and the strengthening of the Linux file system. Other development efforts by Fujitsu, NEC, IBM and Hitachi have resulted in improved tools for analyzing Linux performance and troubleshooting Linux kernels.

Credit Suisse First Boston (CSFB) is another financial firm that has liked what it's seen in

Linux. Earlier this year, CSFB ported its Agora application, which processes large-scale trade orders and manages order flow, to the Red Hat Linux operating system. To replace its RISC-based Unix servers, the company chose Intel-based server hardware from Egenera, which makes a chassis that can house up to 24 Intel processors assembled in two-way or four-way symmetric multiprocessor configurations running Red Hat Linux.

While the financial services firm intends to cut its server costs in half with Intel and Linux technology over RISC-based Unix, benchmarks conducted on the new system have shown that the Agora application runs 20 times faster than it did on RISC and Unix, according to Steve Yatko, CTO of Securities IT at CSFB.

While Linux has come a long way, it still has limitations that keep it from completely supplanting high-end Unix and Windows systems, such as its inability to scale past 16 processors. While the Intel's 64-bit Itanium processor promises more scalability for Linux, the release of the chip has been delayed many times. Meanwhile, Unix developers have had 64-bit architecture from multiple

vendors on which to develop and test applications for several years.

Still, William Claybrook, a Unix/Linux market analyst with Aberdeen Group, says the trend of Linux being used in high-availability and high-performance systems will grow as businesses look to take advantage of lower-cost 32- and 64-bit Intel architectures over proprietary Unix/RISC systems.

Claybrook says by 2004 Linux will account for 80% of the high-performance computing market, or systems that cost in the \$1 million range. However, the shift will not be a sudden shakeup in the market, as the four leading high-performance server vendors — Compaq, HP, Sun, IBM and SGI — all have Intel/Linux products to complement their RISC/Unix offerings. ■

## Marines

continued from page 21

on top. Also neatly packed away are a portable barcode printer, spare batteries and printer ribbons, manuals, docking stations, cables and power cords — in short, everything needed to set up and run a small wireless LAN at a dock, a vehicle park, a warehouse or aboard ship.

For now, the system is not intended to be used on battlefields because inventory control under fire is not a top priority. But Clement says he expects the systems will move closer to the sound of gunfire over time.

## Moving quickly

Using the handhelds, Marines can move quickly around sprawling warehouses, supply depots, docks and ships, accurately scanning the bar codes on every piece of equipment, cargo container or vehicle.

Increasingly, these tags are so-called 2D bar codes, which can store more than a thousand characters of data, compared with just 20 in supermarket bar codes, Clement says. As a result, the 2D tags can identify when, and from where, an item was shipped or even

who last used it.

The handhelds send the data over wireless LAN link to a local laptop, where software applications sift it, store it in a laptop database, analyze it and create reports. Depending on the location and the communications facilities, the data can be sent to other, consolidating databases, such as the Global Transportation Network.

Eventually, Clement says, the wireless LANs will be linked much more tightly with back-end databases. The result will be a military equivalent of several applications common in enterprise resource planning systems. Security is being upgraded by phasing in use of the government encryption standard known as FIPS 140, Clement says.

In the future, the wireless AIT system will be used for manifesting the troops themselves: Tags will include identification numbers, blood type and other personnel data, and let the Marines keep track of who gets on and off helicopters and landing craft.

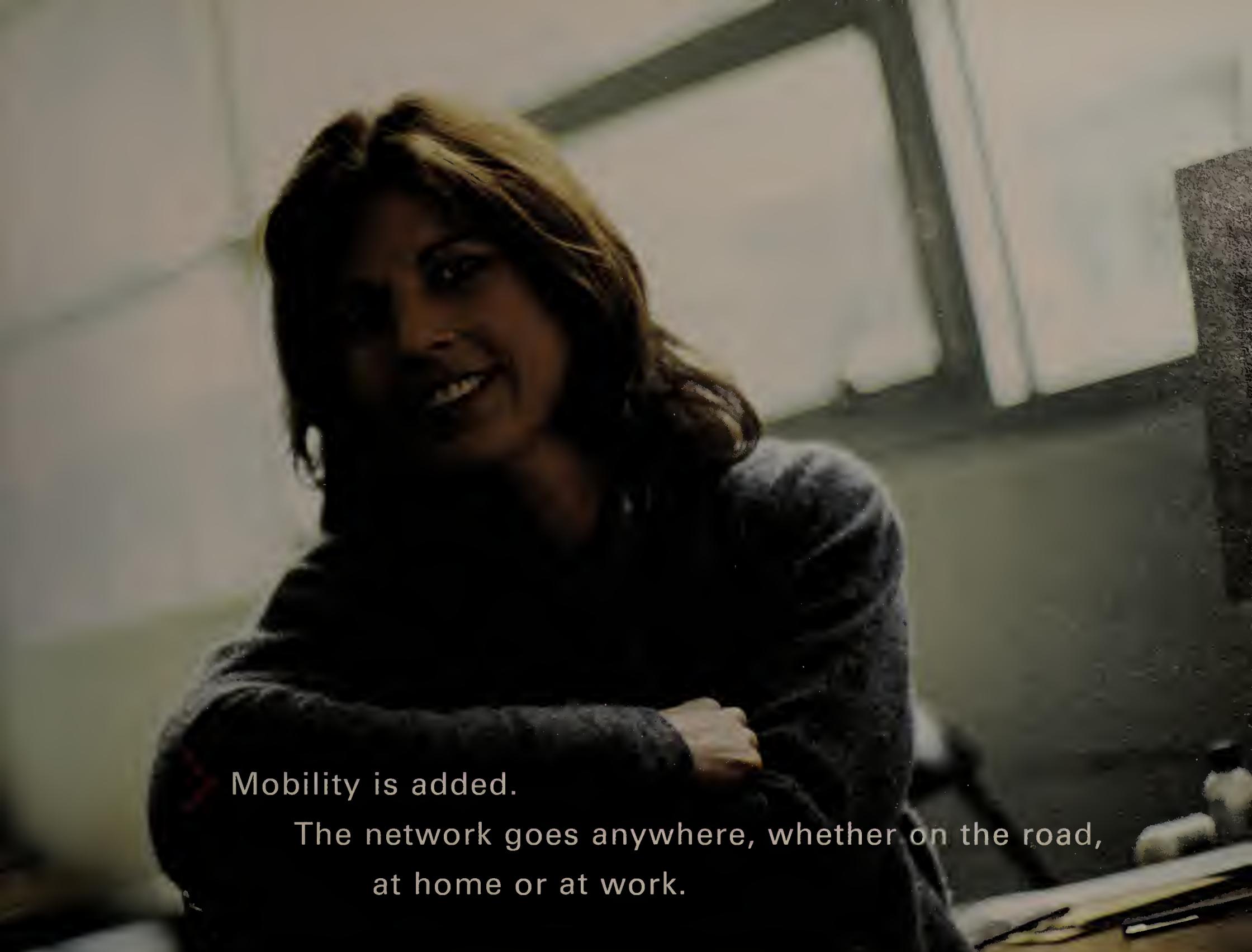
For now, Clement says, AIT is focused on what he calls the "three E's." "We're trying to make this efficient, effective and easy to use," he says. ■



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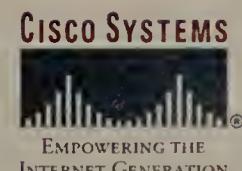
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## Network managers unite!

We (that's you, me and everyone connected with managing networks) get no respect. We're misunderstood. Now I've got proof.

Scott Kersner (see [www.nwfusion.com](http://www.nwfusion.com), DocFinder: 9625) writes for *The Boston*

*Globe*. He also writes for *Wired* magazine and a sister IDG online publication, *Darwin*. It's this latter I'd like you to take a look at (DocFinder: 9626), specifically a column called "How to Decipher the Double-talk of the Techno-Tribe." You

gather that he might be a tad biased when he says: "nontechnologists inside a company — let's call them 'normal people' — often have the best information ...."

The column goes on to "interpret" so-called acronym-ese as spoken by tech gurus. But what it takes to task are those fatuous marketing phrases we all dread — things such as "Our solution is plug-and-play," "We've got multiple provisional patents," and "The analyst firms say ...."

According to the press releases for *Darwin*, the site is intended for CxO types — in theory people who wouldn't know a technology (or a guru) if they tripped over one. Now if they take what *Darwin* says to heart, they're going to think that all the marketing clap-trap they read is produced by techies — the engineers, programmers, network managers and others who they don't respect.

I wouldn't have brought it up, though, if I didn't have a few suggestions about how to handle this.

First, you have to be sure you are invited whenever a technology vendor is making a presentation to your company. Surprisingly, this is the hardest step. Often, the nontech managers will try to have these meetings without you present. They do this because it's their experience that you contradict the marketing people from the vendor and challenge their glossy pamphlets.

Second, contradict the marketing people and challenge their glossy pamphlets. Suggest that their meaningless clichéd phrases are in fact meaningless. Ask them for details, then translate into everyday language for the nontech managers.

Third, thoroughly investigate the subject of the meeting — the technology, the vendor and especially the problem or situation that needs to be answered. Be prepared with suggestions of steps to be taken, software to acquire or technology to implement that will solve the problem.

Kearns, a former network administrator, is a freelance writer and consultant in Silicon Valley. He can be reached at [wired@vquill.com](mailto:wired@vquill.com).

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### Tip of the Week

NetWare sites really need to look into **Avanti Technology's TaskMaster** and **TaskMaster Lite**. These scriptable server tools have a seemingly endless supply of new scripts appearing (free) every month, contributed by the company and other users. At least go to [www.avanti-tech.com](http://www.avanti-tech.com) and download the evaluation copy, you'll find out why thousands of network managers can't do without it.

# network chi



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# Enterprise Applications

■ INTRANETS ■ MESSAGING/GROUPWARE  
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 ■ NETWORK MANAGEMENT ■ DIRECTORIES

## Short Takes

**Check Point Software** last week offered customers two new management products designed to make their lives easier. The new tools, **SmartCenter** and **SmartCenter Pro**, are centralized firewall and VPN management consoles designed to give users a single location from which to manage Check Point products and security policies. By centralizing the functions of a number of the company's offerings into the SmartCenter products, users will save time and money administering their networks, the company says. SmartCenter includes the management console and policy management features, whereas SmartCenter Pro offers those capabilities along with Lightweight Directory Access Protocol access to user information and the ability to automatically download and remotely install software updates and patches. Both products are available. SmartCenter costs \$14,000, and SmartCenter Pro is priced at \$18,000. [www.checkpoint.com](http://www.checkpoint.com)

**PeopleSoft** last week said it would sell **Vigilance's supply chain event management product** with its supply chain management applications. PeopleSoft said supply chain event management can alert employees and suppliers of chain disruptions such as a production halt or an inventory-level dip, and help identify a new source for materials. Pricing was not revealed. [www.peoplesoft.com](http://www.peoplesoft.com)

**Silverback Networks**, which has raised a little more than \$30 million in venture capital, is in the process of closing an \$8 million round that includes new — as yet unnamed — investors. The company, which has 50 employees and 80-plus customers, offers an appliance that companies can use to monitor networks, systems and applications and that Silverback remotely administers and upgrades. John Igoe, Silverback's COO, says the company has increasingly been selling its technology to service providers, which then offer it to their customers.

## IBM targets integrated apps

Big Blue hopes recent changes will unite previously disparate product family.

■ BY ANN BEDNARZ

Integration is a priority for IBM — that's the message, and it's coming straight from the top.

IBM's new chief Sam Palmisano talked about the importance of integrating business applications in his first analyst meeting since becoming CEO in March.

"The network era is all about integration," Palmisano told the audience of financial analysts last month in New York. Companies understand that they need to drive productivity, and to do that requires an integrated infrastructure, he said. "They're now looking at ways to drive end-to-end integration. They want to link up front-end customer systems with the back-end supply chains. Why? To make supply chains more efficient, get more inventory returns, reserve cash — the things you expect people to do, given the economic environment we find ourselves in."

Palmisano's sentiments, combined with a slew of product announcements IBM has made during the past month, highlight a renewed effort by the company to fill out and better package its

extended WebSphere software family, including its WebSphere MQ message-oriented middleware, WebSphere Application Server and WebSphere Portal lines.

It's not the first time IBM has tried to unite fragmented platforms. Its System Applications Architecture initiative was intended to provide a consistent cross-systems programming interface but is generally regarded as a failure because of its complexity and dependency on proprietary IBM technology.

Analysts' comments suggest this time IBM might be on the right track. "In my mind, this is the sharpest they've been with their integration product family positioning and capabilities for several years," says Tyler McDaniel, director of application strategies at Hurwitz Group.

Since rebranding its middleware under WebSphere nearly two years ago, IBM has sometimes had a hard time communicating the breadth of its software infrastructure offerings. "The MQ brand sort of got displaced a little bit," McDaniel says. Meanwhile, many of IBM's pure-play competitors in the integration software market

**See IBM, page 32**

## Sun unites portal from apps server

■ BY JENNIFER MEARS

SANTA CLARA — Sun this week is rolling out the latest version of its portal offering, heightening its identity management capabilities and freeing the portal from the Solaris environment and the Sun ONE application server. That means businesses interested in using Sun's portal product won't be limited by what application server they're running.

It also means businesses can mix and match what server they use to run different portals, using the Sun ONE Web server for a customer-facing portal, for example, and IBM WebSphere for an employee portal. Sun ONE Portal Server 6.0 will support the IBM WebSphere and BEA Systems WebLogic application servers, in addition to the Sun ONE Application Server.

Sun ONE Portal Server 6.0, formerly iPlanet Portal Server, comes with Sun ONE Identity Server, allowing for centralized management of access policies, single sign-on information and user data. With Identity Server, businesses can handle identity management for multiple portals from a single place, says John Fanelli, director of product marketing for portal products at Sun.

The server also can integrate with identity management products from outside vendors, such as single sign-on capabili-

### Freeing the portal

**Sun's latest portal release unites the portal from its application server so it can run on multiple platforms. Here's the schedule for release:**

- **August:** Sun ONE Portal Server 6.0 generally available, with integrated identity management capabilities.
- **December:** Sun ONE Portal Server 6.0 available for IBM WebSphere and BEA WebLogic application servers.
- **First half of 2003:** Sun ONE Portal Server 6.0 available for Windows and Linux.

ties from Netegrity, so customers won't have to scrap previous investments.

Sun ONE Portal Server 6.0 supports technology such as XML; Java; Simple Object Access Protocol; Universal Description, Discovery and Integration; and Web Services Description Language, to make it easier to display Web services within the portal.

Other new features include the ability to

log on once and have access to multiple portals via Identity Server, a single management console to administer multiple portals, upgraded search technology and enhanced customization capabilities for business users.

Rob Perry, an analyst with The Yankee Group, says Sun is smart to let its portal run on other application servers. Sun holds a single-digit share in the application server market, far behind leaders IBM and BEA.

"The Sun ONE Java 2 [Platform] Enterprise Edition server is really not a leader, so their portal was very restricted in that it only ran on their infrastructure," he says. "Now they're off their infrastructure and they can run on any J2EE application server."

Perry says businesses should consider the Sun ONE portal, in large part because of its security capabilities, which are enhanced because of integration with the Sun ONE Identity Server, formerly the iPlanet Directory Server, Access Management Edition.

In the portal arena, Sun competes with fellow infrastructure vendors IBM, BEA and Oracle, and portal companies such as Plumtree, Epicentric and CoreChange.

Pricing for Sun ONE Portal Server 6.0 has not yet been set, Fanelli says.

**Sun:** [www.sun.com](http://www.sun.com)

'NET INSIDER

Scott Bradner



## Enterprise Applications

# 'Net radio update: Sanity may yet prevail

rarian of Congress has rejected the proposal and evoked a provision in the Digital Millennium Copyright Act that gives the Librarian another 30 days to come up with a final plan.

The rejection of the proposal was announced May 21 with a press release that said, in its entirety: "On Feb. 20, 2002, the Copyright Arbitration Royalty Panel [CARP] reported its determination to the Librarian of Congress in the above-captioned proceeding. In accordance with 17 U.S.C. 802(f), the Librarian is given 90 days from date of delivery of a CARP report to review the determination and issue a decision setting forth the final royalty fee and terms of payment. However, if the Librarian rejects the CARP's determination, Section 802(f) provides an additional 30 days to render a final determination."

"The Register of Copyrights recommends, and the Librarian agrees, that the CARP's determination must be rejected. A final decision will be issued no later than

June 20, 2002."

At this point one can only speculate about the mindset of the Librarian. But there is an opportunity for an outcome that will balance the need for the record companies and performers to get paid for their creations and the economic viability of the still-young Internet radio concept.

A number of readers wrote in response to the last column. Most expressed outrage that the intellectual property rights gang would be able to wield so much power. One supported the proposal as fair. Another writer was mad that I would waste so much bandwidth letting KHYI play while I was not there. One letter, purportedly from someone with knowledge of what was going on behind the closed doors, said that all was not lost — implying that there were not only record company sycophants behind the doors.

There is no sure bet on how this will come out. Many people agreed with my assessment that the proposal was almost

irrational in that it would kill a baby industry that could develop into something strong enough to actually provide revenue. And all this just to pursue a many-times-failed pipe dream of subscription-based riches or to just kill Internet radio outright with no other plan. But a number of people associated with the record companies seemed to feel that the fees were too low and that higher fees would be somehow supportable. The Librarian could have decided that the proposal was too lenient and there is gold hidden somewhere in the bits.

But I do have hope for a logical outcome and eagerly await June 20, when we will see the final, at least for now, decision.

**Disclaimer:** Harvard has seen many final-for-now decisions in its 363 years, but this anticipation is mine.

*Bradner is a consultant with Harvard University's University Information System. He can be reached at sob@sobco.com.*

We still do not know if Internet radio will die soon, but the prognosis looks somewhat better than it did not all that long ago.

A few weeks ago I commented on the proposal to require that Internet-based radio stations pay royalties to record companies and performers and expressed concern that the fees would silence the Internet airwaves ([www.nwfusion.com](http://www.nwfusion.com), DocFinder: 9624). At that time the proposal, developed by the Library of Congress' Copyright office, was under review by the Librarian of Congress with a decision due by May 21.

Now one shoe has dropped. The Lib-

## IBM

continued from page 31

— such as Tibco, webMethods, SeeBeyond Technology and Vitria Technology — have made substantial market gains over the last couple of years, McDaniel says.

Part of the challenge for IBM was that many customers weren't sure how all its integration pieces — message brokers, application servers and portal software, for example — fit together. It got even harder to figure this out when IBM announced its plans to purchase business process integration vendor and one-time IBM partner, CrossWorlds Software last fall. "There was a high degree of confusion in the market about what that [acquisition] meant," McDaniel says.

The CrossWorlds buy filled in some gaps in IBM's lineup, notably delivering business process-oriented integration technology the company was lacking. However, it also introduced duplication, in that IBM and CrossWorlds offered message-oriented middleware.

Current Analysis' Shawn Willett says some product overlap is to be expected. "A big company like IBM is going to have more than one platform and multiple technologies to serve multiple constituencies, says Willett, who is the firm's principal analyst for application infrastructure and Internet commerce. "That being said, they needed to unify and give some kind of structure and common architecture to the products that they have. Now they've come out with a fairly coherent plan to do that," he says.

To get to this point, IBM studied what its customers really are trying to do in terms of integrating applications and systems, says Stefan Van Overtveldt, IBM's program director for WebSphere technical marketing. As a result, IBM plans to unite its products on a common technology base, with a common set of tools to support these different styles of applications. "That common technology

## Family affair

**IBM this month announced a slew of product enhancements for its WebSphere family of Web application server, transaction system and application development tools. These are four key elements:**

**More Java:** WebSphere Application Server Version 5 — which is due to begin shipping in July — supports J2EE 1.3 and a good deal of the features in J2EE 1.4. Version 5 also contains support for Java Messaging Service and EJB 2.0 Messaging Beans, which IBM says will allow loosely coupled interaction among J2EE components and legacy systems.

**Bundled Web services registry:** Also new to WebSphere Application Server is a built-in UDDI-supported directory, which is aimed at making it easier for companies to deploy Web services. The private UDDI registry acts as a broker and eliminates the need to individually define a change, such as a customer record update, for every application in a company's systems that contains customer records.

**Security management:** Embedded in WebSphere Application Server Version 5 is Tivoli Access Manager software, which lets companies restrict access to applications or systems based on policies.

**Entry-level engine:** MQ Event Broker is a new addition to the MQ lineup. It's a stand-alone high-speed publish and subscribe engine that lets businesses publish information to specific subscriber systems based on personalized requirements.

base is the WebSphere application server," he says.

"IBM is talking about certain types of integration based on individual customer circumstances. This is a big step forward to helping simplify their message," says Pierre Fricke, executive vice president of Web application infrastructure for D.H. Brown Associates.

One of IBM's moves will be to port CrossWorlds Interchange Server from its proprietary server core to WebSphere Application Server. Van Overtveldt wouldn't say how quickly this makeover of CrossWorlds Interchange Server will happen, but analysts say they expect it to be complete within a year. Already WebSphere Application Server is bundled into IBM's WebSphere Commerce Suite and WebSphere Portal products.

The idea is to provide an integrated soft-

ware infrastructure with common development tools, common security settings and common performance monitoring features.

IBM is going to move to a more standard architecture, Willett says. The company is going to port what it can to the Java 2 Platform Enterprise Edition-based WebSphere server, try to follow industry standards such as Java Connection Architecture and adopt a common standard for the way they define business flows, which today is through Web services flow language, he says.

Users seem pleased with the company's new integration road map.

"IBM is finally getting its story straight," says Shekar Pannala, vice president at State Street, a financial services firm in Boston.

State Street is deploying portal software

from IBM to provide a common interface for its customers across all the financial services firm's product lines — what IBM would call "user integration."

The idea of common infrastructure underpinnings and development tools across the IBM software portfolio was a factor in State Street's decision to choose the company's portal software, Pannala says. State Street already uses WebSphere as its application server and was wary of bringing in another vendor's portal technology to its WebSphere environment, he says.

"We don't believe when portal vendors say that their portal product can run independent of the application server," Pannala says. "There's a lot of integration, a lot of testing that needs to be done to prove the point." Given platform dependencies, it always would be difficult to maintain integration hooks when the application server or portal server needs to be updated to a new version, he says.

Having WebSphere Application Server under the covers of multiple IBM products is key to Whirlpool, too.

"The more IBM gets Portal Server to work well with WebSphere [Application Server] and with MQSeries, the better off it is for me," says Jim Haney, vice president of architecture and planning at Whirlpool in Benton Harbor, Mich. "When they start utilizing a lot of the same base components in the different layers of their technology, they're sharing technology across the different product lines; it just makes it easier to install, implement and operate this stuff."

The notion of marrying an application development and deployment environment with application integration tools isn't unique to IBM. Application server arch-rival BEA Systems added integration tools to its WebLogic platform, though its integration technology is less mature than IBM's, Hurwitz's McDaniel says. Sun and Sybase have made better progress than BEA with their respective efforts, he says. ■



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# Service Providers

■ THE INTERNET ■ EXTRANETS ■ INTEREXCHANGE AND LOCAL CARRIERS  
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## Takes

■ The U.S. Court of Appeals for the District of Columbia recently ruled that incumbent providers should not be forced to give competitive DSL providers access to the DSL spectrum of the incumbents' voice lines. This practice, in which an incumbent provides voice service and a competitive carrier provides DSL service over the same copper line, is generally known as **line sharing**. The Federal Communications Commission is reviewing the court's decision. If the FCC were to end line sharing, providers such as Covad Communications would require a dedicated local loop for DSL service, increasing their costs. Covad says its line-sharing agreements are protected in the short term by contracts.

■ After four months of negotiations, a pair of telecom firms from Asia failed to reach an agreement to acquire bankrupt telecom giant **Global Crossing**. The two firms originally offered \$750 million for a 79% stake in Global Crossing, but Global Crossing's creditors rejected the bid because it was too low. Global Crossing officials say a number of firms remain interested in the company. A final auction of Global Crossing will take place by July 8. [www.globalcrossing.com](http://www.globalcrossing.com)

■ A federal judge has upheld a jury's verdict issued last year regarding patent infringement claims that **Akamai Technologies** made against **Digital Island**, now a wholly owned subsidiary of **Cable & Wireless**. Judge Rya Zobel, of the U.S. District Court of Massachusetts rejected an appeal of the verdict by Digital Island. In December, a jury found that Digital Island's Footprint content delivery network infringed on one of Akamai's patents, but invalidated three of Akamai's other patent infringement claims. Akamai is seeking an injunction to shut down the Footprint service, but Digital Island says it no longer uses the technology in question.

## SBC offering IP, DSL Centrex

■ BY MICHAEL MARTIN

SBC Communications hopes to attract companies striving to cut costs with IP Centrex and DSL Centrex services it unveiled last week.

The offerings are designed to save customers money by letting them use one infrastructure for voice and data.

SBC is the first major carrier to introduce an IP Centrex offering, but industry analysts don't expect business customers to flock to the service.

"Centrex services overall have not done well," says Thomas Nolle, president of consulting firm CIMI and a *Network World* columnist. "It was popular in the '80s but has declined steadily over the past 10 years. I think the service providers are looking at [IP Centrex] on an almost experimental basis to see if it will make Centrex more appealing."

With a Centrex service, customers get the same features they'd expect to get from a private PBX, but instead of the business

### Unifying voice and data

#### Features of SBC's IP Centrex and DSL Centrex services include:

- One network for voice and data.
- Available on monthly or term agreements.
- Web interface allows clients to make line changes.
- Clients can increase or reduce contracts if workforce changes.
- Caller ID service available.

hosting and managing the PBX, the service provider hosts and manages the service.

SBC's offering, called Centrex IP, is based on the Lucent iMerge Centrex Feature Gateway and initially will be available in Chicago; Hartford, Conn.; Houston; Los Angeles; and Sacramento.

Customers will be able to make moves, adds and changes through SBC's existing Web-based CentrexMate interface. SBC also is offering a Centrex Custom Calling feature that lets end users get caller ID information on outside calls.

For remote workers, SBC is introducing Centrex DSL, which gives users the same features as an office phone and a DSL data connection over one line. The data connection can run to either the Internet or back into a company's network.

Although SBC is the first regional Bell operating company to announce an IP Centrex offering, smaller providers have done so, says Tom Jenkins, an analyst with TeleChoice. They include PingTone, AccessLine, TalkingNets and GoBeam.

Centrex IP will be available in September. Tariffs for the service have not been approved, but SBC says pricing will be competitive with its existing Centrex offerings. Centrex DSL is available in Connecticut and will be rolled out to other markets this summer. ■



## AT&T looks to rev up Web hosting

*During the past year, AT&T has been evolving its Web hosting business from simple collocation and*

*management services to an integrated set of offerings designed to meet specific needs. With 18 data centers linked by its Integrated Global Enterprise Management System, AT&T says it is poised to compete with companies such as Digex and IBM Global Services. Its customers include American Financial Group, Budget Rent-a-Car and Hyatt Hotels. Network World Senior Writer Jennifer Mears recently spoke with Pat Traynor, vice president of managed and hosting services for AT&T, to find out what the carrier expects from hosting down the road.*

#### Things are stagnant now in the Web hosting market. When – and how – do you see things picking up?

As I look at the marketplace, I would say it's as dynamic as I've ever seen it, especially over the last couple of months. It's been pretty clear that the direction is shifting to value-added services. About a year or so ago we realized, and I think the industry did, too, that to remain a viable player we had to offer value-added management services. Stand-alone hosting providers weren't going to make it. The target client shifted from dot-com to the large enterprises, and meeting enterprise client needs requires a much more sophisticated and complex set of management capabilities and services. We see tremendous growth, particularly for the managed services and advanced services elements.

#### How are business needs changing when it comes to hosting?

The reason that business needs are changing is because of the mission criticality of the business applications and the nature of enterprise businesses. Most of the applications and the environment requirements that enterprise clients have are driven by the investment they've made in their mission-critical business applications. That's a big shift from the dot-com era where an entire business was born on the Web. Now the Internet, intranet and extranet technologies and capabilities become an integral part of a business application.

See Traynor, page 37



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Johnna Till Johnson



## The business case for route control

argument goes, the cost of redundancy is too high. With route-control products, multihoming gets far easier, and the cost justification for multihomed connections becomes compelling.

**2. Risk-free migration to IP VPNs.** As I've mentioned in previous columns, it's difficult to make a business case to rip out a perfectly functional frame relay WAN and replace it with a risky, potentially lower-performing IPVPN. So how does an enterprise network manager launch the company on the path toward IP VPNs without making a career-limiting mistake? Use route optimization to selectively send some application traffic across the Internet (with appropriate encryption, of course). See if anyone notices a performance decrease. If not, you've made your point — the Internet can serve as an appropriate mechanism for supporting critical traffic. And best of all, you've changed the parameters of the debate. Now your company has to scramble to justify the additional expense of a private WAN instead of asking you to vouch for the hypothetical performance of a prospective VPN solution.

**3. Extranet deployment.** As regular readers are aware, I've long been a proponent of extranet services for company-to-com-

pany communication (supply chains and the like). A critical enabling mechanism for extranets lies in providing high-quality connectivity between companies on different IP networks. Route optimization provides that missing link. In tandem with VPN security solutions, route optimization lets companies set up extranet links that are independent of the IP services selected. It's likely to be a critical application as these products become more commonplace.

So where do you find these products? Vendors include Proficient Networks, netVmg, RouteScience Technologies and Opnix. Services also have been available for several years. Check out Sockeye and Internap. A detailed analysis of selection criteria is beyond the scope of this column, but look for strong policy control (with good links into business logic), an intuitive graphical user interface, and effective link performance measurement techniques. Vendor support also is critical, particularly if you need help configuring BGP.

*Johnson is senior vice president and CTO for Greenwich Technology Partners, a network consulting and engineering firm. She can be reached at johnna@greenwichtech.com.*

**A** few vendors have begun offering products featuring "route control" or "route optimization" functionality.

Essentially, these devices automatically route IP packets over the most appropriate IP connection, where the definition of "most appropriate" depends on the business requirements of the applications generating the packets. A mission-critical application might require the lowest possible latency and packet loss, while ordinary Web traffic should be sent at the lowest cost.

Why would anyone want to do this? There are three main business applications for route control.

**1. Easy, cost-effective multihoming.** For years, companies have avoided multihoming (connecting to multiple ISPs, generally for redundancy) because of the challenges of implementing Border Gateway Protocol (BGP). If you need to have an expensive BGP-savvy engineer on staff just to keep up your multihomed links, the

**Q A****Traynor**

continued from page 35

**Talk about the investments AT&T has made in hosting.**

We built 18 state-of-the-art Internet data centers and integrated those into AT&T's worldwide IP and intelligent network. So they aren't 18 stand-alone Internet data centers — they are very much integrated into and are managed by the same process, discipline and rigor with which we manage our scalable and reliable IP and other networking capabilities. The AT&T infrastructure now includes our voice services, our data services, our IP and our Internet data centers.

The second big investment area is [Integrated Global Enterprise Management System]. Over the last six or seven years, we've invested more than \$200 million in iGEMS, which is our network and application management platform that provides predictive, application monitoring and management. With iGEMS, we're able to provide proactive application performance management. We're able to provide predictive fault management. We're able to provide capacity management. Ultimately, we are able to deliver customer-defined transaction-level performance guarantees. iGEMS manages across the network domain, the server domain and the application domain.

**What are you offering large companies?**

The full suite of managed hosting services includes application-performance management, database management, hardware and operating system management, intelligent-content distribution, high availability data and computing services, storage, managed security and firewall services, load balancing across multiple Internet data centers and locations, and, of course, fundamental VPN and data networking integration.

We offer [service level agreements] that cover the business-transaction availability and response time, as well as server and application availability, network availability and, of course, resolution management. Our managed services portal for hosting gives customers comprehensive real-time performance reports with integrated SLA data and collaboration tools.

**How important is hosting for AT&T?**

AT&T's direction and investment in our Web hosting and managed services is a reflection of AT&T's business evolution. AT&T's focus includes the growth areas of IP, hosting and VPN. AT&T views Web hosting, as well as VPN and IP, as the strategic growth areas for our business, as well as how to meet enterprise-client needs.

**AT&T recently sold its shared hosting business to Interland. Are you now out of the shared hosting business?**

Yes, we are. We divested ourselves of that business in January of this year, and we are primarily focused on large enterprise accounts as part of a strategic business decision as we look to serve the enterprise market with these additional value-add services.

**What can businesses expect from you when it comes to Web hosting going forward?**

Clients should expect to see a richer and deeper portfolio of services as their needs change. Additional global expansion — so many of our multinational customers are asking for an extended global footprint for hosting, and we're delivering on that. Content delivery will be inherent in our value-added services as we extend worldwide. Businesses can also expect a richer set of business continuity options for our hosting customers. So they'll see a global extension and footprint, they'll see a deeper set of hardware and software certification and they'll see a richer set of business continuity capabilities. ■

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# Special Focus

**VENDOR PROFILE:** A look at Cable & Wireless.

## Acquisitions paying off for Cable & Wireless

■ BY JENNIFER MEARS

A year ago, British telecom company Cable & Wireless was barely a blip on the Web hosting screen. But it had big plans.

The carrier, with only eight data centers dedicated to Web hosting, had just purchased Digital Island, picking up 10 hosting centers and an established content delivery network (CDN).

It also had been eyeing Exodus Communications, the leader in the Web hosting market with dozens of data centers and thousands of customers — not to mention worsening financial problems. Last fall, after Exodus filed for bankruptcy protection, C&W swooped in to pick up millions of square feet of data center space and Exodus' established reputation for a bargain price.

Now the telecom company, which accounted for less than 5% of the Web hosting market in 2000, is battling with IBM Global Services for the top spot, analysts say.

"And they've done it for pennies on the dollar," says Jarad Carleton, program leader for Internet infrastructure at market research firm Frost & Sullivan. "If I were an investor in Cable & Wireless, I'd be particularly pleased."

Business customers, especially those that remained faithful to Exodus during its tough times, also should be grinning. By picking up Digital Island and Exodus, C&W is poised to offer a true end-to-end spectrum of global IP services from network services to content delivery to managed hosting. And the company is coming to the market in a strong position with about \$3.8 billion in the bank — a prime situation for a Web hosting company surrounded by peers struggling to reach profitability and others going out of business.

Not that it's all smooth sailing. C&W faces the monumental task of integrating its acquisitions into its operations and corporate culture. And it must do this in an economic environment that hasn't been kind to carriers or Web hosting companies.

Nevertheless, C&W remains committed to the vision CEO Graham Wallace laid out in 1999: to focus on serving enterprise customers with IP and data services. With its hosting assets outperforming expectations, Wallace says the company is ready and well-positioned to heighten its focus on IP services in the U.S.

Toward that end, the company plans to sell its domestic voice business and certain data services, a spokeswoman says. Its IP communications services will be integrated with the hosting and content distribution services now being delivered in the U.S. under the name "Exodus, a Cable and Wireless Service." Former Exodus CFO Bill Austin heads the new division. The integration is slated to be completed by July 1.

Which data services will be relinquished is unclear, although the spokeswoman says the company is reviewing the profitability of domestic voice services; national frame relay and ATM; specific private-line circuits; and Internet access services. The company says it intends for the transition for affected customers to be "timely and seamless."

Meanwhile, C&W has trimmed its staff by eliminating overlap of responsibilities and figured out how best to marry the expertise of its Exodus and Digital Island acquisitions, says Duncan Black, director of corporate solutions strategy.

As for data centers, Black says C&W chose 29 of Exodus' 44 data centers — 26 in the U.S. and three abroad — and now has 46 data centers worldwide. There was customer concern about transitions, but C&W said in its year-end earnings statement that more Exodus customers than expected stayed put, helping Exodus to pull in higher revenue than anticipated.

Still, there was churn. C&W wouldn't be specific about customer numbers, but Tier 1 Research estimates that Exodus had about 3,700 customers at the end of September 2001 and ended March with about 2,200.

Sean Armstrong, senior Internet manager at software maker Network Intelligence in Walpole, Mass., says there have been some "hiccups" in service as C&W pulled in its Exodus assets, but that overall the transition hasn't been as painful as he expected.

"When Exodus was going under, we had plans in place to pull out of there as soon as performance or connectivity problems arose. Fortunately, they never did," says Armstrong, who collocates servers at an Exodus facility in Massachusetts. "It appears that lots of other companies didn't wait to pull out. The Exodus/C&W [collocation] facility is a pretty lonely place now."

As for services, customers will see more from a single provider, C&W's Black says. For example, Exodus will no longer resell Mirror Image content delivery services, but customers can use Digital Island's CDN.

"It's not like one large hosting company taking over

**“It’s not like one large hosting company taking over another large hosting company. The companies all had different core competencies and are very complementary in terms of what Graham Wallace’s overall strategy was for e-business infrastructure.”**

**Duncan Black**

Director of corporate solutions strategy, Cable & Wireless

another large hosting company," Black says. "The companies all had different core competencies and are very complementary in terms of what Graham Wallace's overall strategy was for e-business infrastructure."

Ulrich Seif, CIO at National Semiconductor in Santa Clara, which hosted its external Web sites with Exodus, says he looks forward to using the additional services and the wider reach that are now available.

"We have been encouraged by our early experiences with them," he says. "We will look to be able to leverage their global caching services down the road with a little architecture redesign on our part. We also look forward to their established network in Asia for better performance for our growing customer base there."

Seif says that while C&W obviously is striving to be the

### The sum of C&W's parts

**Cable & Wireless, which acquired Digital Island last year and completed its acquisition of Exodus earlier this year, has assembled a broad foundation for delivering IP services. Here are some statistics of the new business unit:**

**Host data centers:** 46 worldwide.

**IP network:** Spans 70 countries.

**Content delivery network:** Reaches more than 35 countries.

**Hosting unit employees:** 2,500.\*

**Offerings:** Managed infrastructure services, professional services, storage and back-up services, platform services, content delivery, monitoring and reporting services, security services, collocation services, dedicated access, IP VPN, Frame/ATM and private lines.

\*According to Tier 1 Research.

leader in Web hosting and IP services by acquiring companies and establishing partnerships, "we'll have to see how well they manage that growth."

So far, businesses and analysts seem to think it's doing fine. While some customers reportedly have complained about changes in billing structure or juggled account managers, most seem satisfied.

Covisint, the online automotive industry exchange in Southfield, Mich., has been hosted at Exodus for about two years and recently signed a three-year extension with C&W. Kevin Vasconi, CTO at Covisint, says the online exchange was kept well-informed of all the transitions.

"Our highest priority is around preventing any disruption to our customers, and there was absolutely none," Vasconi says.

"We spent a little more management time because we had to keep informed and aware of what was going on. But my account rep hasn't changed, what I buy hasn't changed and where I host my servers hasn't changed."

Managing things, however, is different than growing a business, which is where C&W will have to focus in the months

ahead. While it's bringing a suite of complex services to the table, businesses might not be ready to buy the high-end offerings.

"C&W is facing the same hurdles as everybody in this market: trying to get customers to open their wallets," says Melanie Posey, program manager for Web hosting at IDC. "Nobody is banging down the doors to buy services." ■



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# The Edge

SERVICE PROVIDER DEVELOPMENTS  
AT THE JUNCTURE BETWEEN THE ENTERPRISE  
AND THE NEW PUBLIC NETWORK

## Nortel extends next-gen SONET line

New products, enhancements to others designed to speed service delivery, reduce costs.

■ BY JIM DUFFY

OTTAWA — Nortel last week unveiled next-generation SONET products and enhancements designed to reduce the cost of provisioning new metropolitan services.

New products include the OPTera Metro Connect optical cross-connect and the

OPTera Metro 3000 DS-1 Service Module, which is intended to increase DS-1 service density with minimal consumption of equipment rack space. Nortel also extensions its OPTera 3500 metropolitan optical platform, which now includes enhanced security, optical Ethernet configuration options and bidirectional Resilient Packet Ring (RPR) switching.

The announcements are not a breakthrough, but incremental extensions to current Nortel offerings, analysts say.

"It's not brand-new product here, it's really enhancements to existing products," says

## SUPERCOMM

IEEE 802.17 standard for packet-based services provisioned over metropolitan fiber rings, and supports native-rate Ethernet data interfaces such as 10/100Base-T, 100 Base-FX and Gigabit Ethernet.

The system is designed for cross-connect and service-termination applications at central offices. It is intended for medium-density central offices, where it operates as a single-head end node for multiple rings running various speeds — OC-3, OC-12, OC-48, OC-192 — and various types of traffic: DS-1, DS-3 and Synchronous Transport Signal (STS)-1.

See Nortel page 42

## Short Takes

■ Optical Ethernet start-up **Atrica** last week announced that it has appointed **Timothy Dixon** vice president of marketing. Dixon will report directly to President and CEO Vivek Ragavan and will manage Atrica's corporate marketing, product marketing, product management and standards activities. Dixon replaces David Yates, who left Atrica to pursue other interests.

A 20-year industry veteran, Dixon most recently was vice president of marketing for Calient Networks, a provider of photonic switching systems and software. Before joining Calient, Dixon spent several years at ADC Telecommunications, where he was vice president of strategic marketing for the company's Teledata subsidiary. Before ADC, Dixon held various engineering, project management and business development positions at Tellabs, where he was responsible for development of Tellabs' TITAN 5500 digital cross-connect product.

### ■ The Resilient Packet Ring

**Alliance**, an industry advocacy group promoting RPR technology, has announced four new members from the semiconductor, test and edge equipment provider market segments. The new members include broadband access vendor **ARRIS**, components supplier **Infineon Technologies**, **Intel** and performance-analysis system maker **Ixia Communications**. RPRA has 10 principal members and 10 participating members.

## Carriers: Innovation not at standstill

Despite spending cutbacks, convergence and other efforts moving ahead.

■ BY BOB BROWN

BOSTON — It's still true that carriers are spending mostly on technologies that will help them reduce operational costs and keep future capital spending in check. But a panel of service provider executives speaking here recently said their companies are also forging ahead with technology rollouts that will let them offer advanced services and provide better customer service.

The panel, which included representatives from CTC Communications, Genuity, Verizon and TeleChoice, kicked off the Massachusetts Telecommunications Council's annual investor's conference.

While Verizon is reducing its spending from \$17.4 billion last year to \$14 billion or \$15 billion this year (with wireline spending expected to drop as much as 23% and wireless as much as 12%), that still leaves the company with plenty of capital to devote to new technology.

Among its priorities are upgrading operational support systems and its ability to conduct e-business with customers and suppliers, said Paul Lacouture, president of Verizon's Network Services Group. Spending will also go to World Trade Center recovery efforts — about \$1.5 billion over three years — fast packet technologies including Gigabit Ethernet and passive optical networks, and wave-division multiplexing.

The carrier needs to improve its systems for swapping traffic between wireless and

wireline facilities as wireless traffic booms, and for supporting an increased presence in the long-distance market, Lacouture said.

While much has been made of the telecom industry's overinvestment in network capacity, Lacouture said Verizon still needs to boost bandwidth.

"We do not have a surplus of capacity in many locations" outside of the backbone, he said. The company will further invest in or at least investigate access technologies such as DSL, fixed wireless and fiber to the home, he added.

### Building better service

Genuity, which is partially owned by Verizon, will squeeze capital spending this year to between \$400 million and \$500 million, down from \$1 billion last year and \$1.8 billion the year before. But with 5,000 enterprise customers to serve and traffic volumes more than doubling, the company is focusing on provisioning new services faster, delivering better service-level agreements and better tracking network usage, said Steve Blumenthal, senior vice president and CTO.

The service provider has more than 1 billion minutes in voice-over-IP usage and continues to invest in that technology while expanding its VPN capabilities and virtual meeting offerings, Blumenthal said.

CTC, which spent \$107 million in 2001, will use the \$60 million to \$70 million it

### Data takes over

Whereas **52%** of Verizon's capital spending went toward its traditional circuit-switched voice network in 1999, only **41%** will this year. That contrasts to spending on its packet-based data network, which will increase to **35%** this year from **25%** in 1999.

spends this year on products supporting its regional optical network buildouts and migration to Multi-protocol Label Switching, among other things.

While other service provider executives talked optimistically, panelist Russ McGuire, chief strategist for TeleChoice, did not. During his presentation, his first slide read: "Budget Exists For: Nothing!" and he said carriers are looking for anything they buy to pay for itself within one quarter. He later amended that assertion to eight to 12 months.

"Most carriers are operating more from the fear side than the growth side," he said.

Carriers even are balking when vendors offer them free equipment and software, because even testing such products costs money, he said. ■

# Z-Tel gets an edge with SnowShore media server

Flexible gear supports advanced phone services.

■ BY TIM GREENE

A relatively new and obscure piece of phone network equipment called a media server is starting to make a difference for service provider Z-Tel, which is supporting new services based on the gear.

With a media server made by SnowShore, Z-Tel and software vendor Proficient Networks are cooperating to use online chat and regular phone calls as tools to connect corporate sales staff to potential customers who are browsing the corporate e-commerce site.

The browsing customer is contacted via the Web, invited to online chat with a sales agent, and if the contact seems promising, get on the phone for a conversation.

Getting the service to operate properly requires Proficient's

Sales Server software and a service provider network such as Z-Tel's that can bring together the necessary network elements.

A corporate customer using the service would own Sales Server, software that tracks who is browsing the e-commerce site and contacts them via a pop-up window if the browsing pattern indicates the customer seems interested in a particular product. The software also keeps track of which sales agent seems like the best fit for the potential customer based on factors such as where they are located and what products they are trained to sell.

The pop-up window asks the customer if he wants to chat with an agent. If so, Sales Server sets up that chat link via the Web. The software also can set up a phone connection if a business interest develops. The software takes the customer's and agent's phone information and instructs Z-Tel's network to set up the call. The SnowShore media server acts as a bridge to contact both parties.

Because a media server is a general processing platform, it can be linked to many service applications and perform whatever data crunching the applications require. The alternative would be each application residing on its own server hard-



SnowShore's N20 media server processes phone applications.

## Nortel

continued from page 41

OPTera Metro Connect provides STS switching and grooming with Virtual Tributary 1.5 granularity. It supports 30G bit/sec to N times 140G bit/sec per bay in 2.5G bit/sec increments.

The system combines the capabilities of Nortel's OPTera Metro 3500 and OPTera Connect DX cross-connect, which is targeted at applications requiring greater than 140G bit/sec of capacity, Nortel says. By the company's estimates, OPTera Metro Connect will save service providers up to 50% in operational expenses, 45% in capital costs, 40% on power consumption, 60% on floor space and 30% on intraoffice fiber use over competing systems and the 3500/DX combination.

In that sense, Metro Connect is "a good product evolution for Nortel," says Brian Van Steen, senior analyst at Point East Research. "They've reduced the footprint, added some functions and features. It should do well with their existing customer base."

The OPTera Metro 3000 DS-1 Service Module (DSM) can be used with the OPTera Metro 3400 and 3500 metropolitan optical transport platforms. It provides eight times the previous DS-1 density of the 3500 while consuming half of the platform's service slots and double the density of the 3400.

The DSM is intended to bring optics to the customer premises, Nortel says, and to let service providers increase density within a small footprint. It is designed to eliminate the need for additional service-specific boxes within the network, a situation Nortel refers to as "stacked shelves"; lower power, space and fiber requirements; simplify management; and accelerate service deployment.

Each DSM can support up to 84 DS-1s. Line-side connection to the 3400 or 3500 is OC-3.

Security enhancements to the 3500 include password-management restrictions, and improved intrusion-attempt handling and connection identification. Nortel also has added the Customer Managed Network security feature, which

## Next generation

### Nortel's new and enhanced SONET products include:

#### OPTera Metro 3000 DS-1 Service Module:

- Designed to bring optics to the customer premises.
- Eliminates stacking shelves.
- Supports 84 DS-1s per module.

#### OPTera Metro 3500 extensions:

- Nonblocking OC-48 bidirectional line switched ring RPR.
- Password protection, security alarms.
- Optical Ethernet in point-to-multipoint, multipoint-to-multipoint.

#### OPTera Metro Connect:

- Cross-connect for requirements from 2.5G to 100G bit/sec.
- Designed to reduce dependency on digital cross-connects, multiple overlay networks and electrical interfaces.

will let customers set an access list to their network elements so no external source can intrude, even with multiple customers

sharing the same optical ring, the company says.

In addition, Nortel has added logging and audit trails, which are designed to aid network operators in planning network security and tracing security breaches.

Optical Ethernet enhancements include OC-48 bidirectional line switched ring (BLSR) with nonblocking Virtual Tributary 1.5 assignment. BLSR is a method of SONET transport in which half the traffic is sent counter-clockwise over one fiber and the other half is sent clockwise over the other fiber.

This method provides a 50% improvement in bandwidth efficiency over unidirectional path switched ring, the mode of operation supported up to now on the 3500. In addition, Nortel has added BLSR capability to support RPR in protected channels for more efficient delivery of next-generation Optical Ethernet services based on this emerging standard.

All next-generation SONET products and enhancements are available now. Nortel did not disclose pricing. ■

## The Scoop

The news behind the news

### What is a media server, anyway?

As phone companies redesign their infrastructure to accommodate voice and data on one network, they separate network elements in an attempt to boost efficiency and flexibility.

One of the devices that has sprung up because of this is the media server, which acts as a processing engine for the applications that define services.

In traditional phone networks, the application software is bundled with the hardware needed to process the service, creating multiple devices to support the many services carriers offer. These devices increase network complexity and boost costs by introducing more elements that require management and maintenance.

Depending on the service application, a media server might process spoken words into digital commands that could be understood by a voice mail system, enabling remote users to navigate their phone messages with speech rather than punching numbers on a phone. Or the media server could process the text of an

e-mail so an application could "read" the e-mail aloud to the user.

The application software that taps the processing power of the media server can be part of the media server itself or it can be loaded on separate application servers. Because the applications need not be on the same hardware as the media server, the media server could be used to process applications that are already part of traditional phone networks. That means current service providers using traditional networks can migrate to packet voice networks but continue to offer the same services they do today without necessarily buying new application software. To facilitate this, media gateways typically use session initiation protocol (SIP), media gateway control protocol (MGCP) and other standard languages for talking to other network devices.

Vendors specializing in media servers include Converdia, IPUnity, Mockingbird, SnowShore and ThinkEngines.

— TIM GREENE

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# Technology Update

■ AN INSIDE LOOK AT THE TECHNOLOGIES AND STANDARDS SHAPING YOUR NETWORK

## Web application firewalls protect data

■ BY IZHAR BAR-GAD

While traditional firewalls address network access control, blocking unauthorized network-level requests, application firewalls address the application layer by enforcing requests within application sessions. An application firewall specifically protects the Web application communication stream and all associated application resources from attacks that happen via the Web protocol.

Application firewalls address browser and HTTP attacks that manipulate application behavior for malicious purposes. These include data attacks, which use special characters or wild cards to change data; logic content attacks, which go after command strings or logic statements; and target attacks, which focus on accounts, files or hosts.

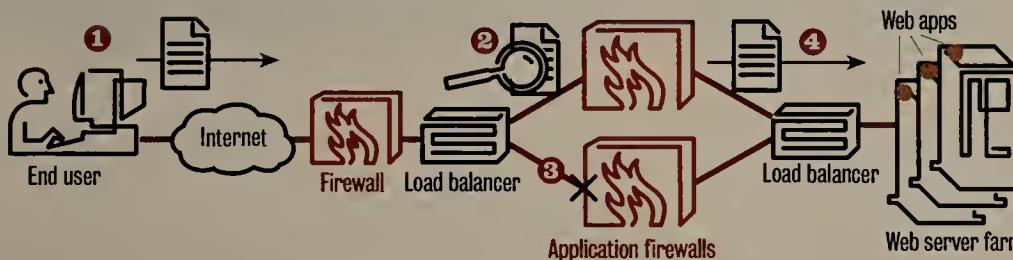
There are two approaches for an application firewall — a positive security model, which enforces positive behavior; and a negative security model, which blocks recognized attacks.

A positive security model enforces positive behavior by learning the application logic and then building a security policy of

### ■ HOW IT WORKS

#### Application firewalls

**Application firewalls block browser and HTTP attacks by matching incoming requests with known attack signatures or with policies.**



- 1 End user opens an HTTP session and starts making requests for Web applications.
- 2 Application firewalls examine requests against database of known attack signatures.
- 3 Recognized attacks are blocked by the application firewalls.
- 4 Valid requests are passed on to the application server for processing.

valid known requests as a user interacts with the application. The approach is as follows:

1. The initial policy contains a list of valid starting pages. The user's initial request must match the starting pages before creating a session policy.
2. The application firewall examines downloaded page requests, including page links, drop-down menus and form fields, and builds a policy of all allowable requests that can be made during the user's session.
3. User requests are verified as valid before being passed to the server. Requests not recognized by the policy are blocked as invalid requests.
4. The session policy is destroyed when the user session terminates. A new policy is created for each new session.

A negative security model blocks recognized attacks by relying on a database of expected attack signatures. The approach is as follows:

1. The policy is created with a set of known attack signatures.
2. There is no downstream page analysis to update the policy.
3. Recognized attacks are blocked, and unknown requests (good or bad) are assumed to be valid and passed to the server for processing.
4. All users share the same static policy.

Application firewalls install between the firewall and the application server, functioning at Layer 7 of the ISO model. All session information, both upstream and downstream, runs through the application firewall. Downstream requests are channeled through the application fire-

wall, and in the case of a positive model, parsing occurs to build the policy. This requires an application firewall to sit in front of a cache server to ensure request validation.

Upstream requests also are channeled through the application firewall allowing only valid requests, thereby off-loading bad requests from the server.

Application firewalls understand inbound and outbound session requests. They offer in-line integration with existing applications and are compatible with Web application technologies. They work in real time to address threats before they reach the application.

An application firewall listens on TCP Ports 80 and 443, and accepts incoming HTTP/Secure HTTP requests from the client, parses them, associates them with a session or creates a session if required, and then matches requests to the policy for the session.

If this request is permitted (that is, the link is allowed), it is forwarded to the Web server. If it is not permitted, it is rejected. The Web server's response arrives at the application firewall, is associated with the same session the request belongs to, is parsed, and policy update (new links that are allowed) is extracted and associated to the session.

If this is the response of the first request, a cryptographic session cookie also is attached to the response to identify the client session in further communications. The application firewall finally forwards the response to the client.

*Bar-Gad is CTO at Sanctum. He can be reached at ibargad@sanctuminc.com.*

### Got great ideas

■ Network World is looking for great ideas for future Tech Updates. If you have one and want to contribute it to a future issue, contact Features Editor Neal Weinberg ([nweinberg@nww.com](mailto:nweinberg@nww.com)).

### Ask Dr. Internet

By Steve Blass

I'd like to connect my Sharp Zaurus PDA to my company's intranet (the connection needs to be wireless, naturally). What configuration has to be done at the VPN gateway and on the PDA? Also, how can I connect the PDA wirelessly to my stand-alone PC, which uses a dial-up connection?

Most PDA vendors, such as Sharp, support wireless Internet connectivity through bundled service offerings that provide limited Web browsing,

instant messaging and Post Office Protocol 3 or Internet Message Access Protocol e-mail connectivity. In particular, Sharp's Mobile Services for the Zaurus are not yet generally available and the enterprise version will not be available when the service first launches. Service includes the wireless modem you'll need and monthly airtime. The site [www.myzaurus.com](http://www.myzaurus.com) contains technical specifications, pricing and availability information. Intranet connectivity for employee PDAs will

require a wireless provider with an end-to-end corporate system.

To connect your PDA to your PC at home wirelessly, install a wireless LAN and wireless LAN cards in the PDA and PC. Standard 56K bit/sec modem cards and Ethernet cards are available.

Blass is a network architect at Change@Work in Houston. He can be reached at [dr.internet@changeatwork.com](mailto:dr.internet@changeatwork.com).

**GEARHEAD  
INSIDE THE  
NETWORK  
MACHINE**

Mark  
Gibbs



Recently we discussed Rich Site Summary (www.nwfusion.com, DocFinder: 9627) and followed that with a piece on RSS tools (DocFinder: 9628).

We've been looking for a better RSS reader (also called a news aggregator) than the one discussed in the second article, but there's not a lot from which to choose.

That said, one that is rather impressive is called AmphetaDesk from Disobey.com.

AmphetaDesk (so named because "creating a memorable and fun project name brings me immense joy") is described by the author as "a news aggregator — it sits on your desktop, downloads the latest news that interests you, and displays it in a quick and easy-to-use (and customizable) Web page. With thousands of channels for selection, AmphetaDesk can shave hours off your day — and you'll look smart to all your friends! Egotism

## A better RSS reader

never had it better!"

AmphetaDesk's architecture is interesting: "AmphetaDesk is developed with Perl and XML. All GUI functions are done in Perl using libraries from the specific operating system as well (since forcing the user to download Tk is a bad thing). Runtime versions are built with Perl2EXE (for Windows, a command line utility for converting Perl scripts to executable files; www.nwfusion.com, DocFinder: 9631) and MacPerl (for Macs, www.macperl.com).

"The latest source code is available from SourceForge CVS and is designed to figure out what operating system you're using at the time and load in the correct libraries (although you'll probably need to download and install various modules from CPAN). Besides the module dependency, the source code should work without modification."

AmphetaDesk polls (via HTTP) the list of RSS feeds you have chosen (each feed is described by a URL) and downloads the RSS content. To view the headlines you need a Web browser because AmphetaDesk has a built-in Web server to deliver the headlines.

Installation is fast and simple, and on first launch AmphetaDesk creates all its configuration files. AmphetaDesk is sim-

ple: Its user interface consists of a display of status messages and a bar that offers exit; copy; select all; open window (that is, a browser display); and refresh channels (which downloads a new copy of the RSS file from each selected site and then opens a browser display).

The only configuration options for AmphetaDesk are whether to open a new window when a headline is clicked on and the full path to your preferred browser (in case your browser isn't launched automatically or you want to use a different browser — such as K-Meleon. K-Meleon is a lite Web browser based on Gecko — the Mozilla rendering engine. It's fast, has a minimal interface, and it is fully standards-compliant. To make it simple, K-Meleon may be considered the unbloated Mozilla for Windows.) See www.nwfusion.com, DocFinder: 9632.)

You can select RSS feeds from the enormous list provided (a total of 1,646 feeds for the release we downloaded) and therein is our only complaint: We would like to search this list and ideally do so by category (news, science, vitally impor-

tant and so on).

And partly to bait our editor and partly because we really like this feature, one of the cool things about AmphetaDesk is that it is designed to be "skinned." Now, in the case of AmphetaDesk, skinning is done by editing the HTML templates that are used to format its output or, if you want to modify the control application, you can change the logo and Windows or Mac icons.

Even better, AmphetaDesk comes with a set of highly commented templates and

an uncommented working set. This makes the use of the gazillion template variables understandable. These variables are included in the templates and are replaced on the fly. They cover channel data, channel contents, system attributes, settings and just about anything else you might want to display.

In our testing, AmphetaDesk ran flawlessly and it is reasonably fast (Internet access speed notwithstanding). Way, way cool and (drums please) it's free! Ten gearteeth out of 10!

Your comments to gearhead@gibbs.com.

### GEARHEAD RATING



1=awful,  
10=insanely  
great



## Cool Tools

Quick takes  
on high tech toys  
By Keith Shaw

### Stopping pop-up ads

If you're annoyed by pop-up ads, you definitely need to install either PopNot from High-Density Software or Panicware's Pop-Up Stopper.

The PopNot software was easy to install and worked well (we got no unsolicited pop-up or pop-under windows) in our tests. The software can display a visual and/or audio alert when it stops a pop-up window from appearing.

The configuration features are easy to understand, and you can allow pop-up windows for specific Web sites if you choose. Clicking a link where a new window appears won't be stopped, but it will prevent cases where a pop-up window appears if you "cancel" or hit the back button. The software also keeps a log of all the locations that were "stopped," and there are other advanced features if you want to get more specific about what you are stopping. The software costs \$20, and you can download a 15-day evaluation version from www.hdsoft.com.

Panicware's Pop-Up Stopper offers three versions — a free version with basic pop-up stopping capabilities, and a professional version (\$20) and a Companion version (\$40), which offer advanced pop-up stopping features.

We tested the latest version of Pop-Up Stopper Companion, which added a customizable toolbar to our Internet Explorer browser. In addition to pop-up stopping controls, the tool bar includes "cleaning options," which lets you clean your browser history, cookies, cache and

## Pop-up stopper tops our test list

recently viewed documents, and empty the recycling bin. There's also a "keep list" that lets you specify what Web sites from which you don't want cookies eliminated. Both pay versions offer free lifetime upgrades. Head to www.panicware.com for more information on the products.

### Color scanner that's pretty mobile

We also looked recently at Pentax Technologies' DSmobile Universal Serial Bus (USB) color mobile scanner, which is small enough (11 inches wide and only 12 ounces) to take with you if you're traveling. The scanner hooks up via your USB port, and lets you scan documents, photographs and magazine articles quickly and easily.

The hardware scanner comes with Pagis Pro scanning software, which lets you scan items directly into applications (including Excel, Internet Explorer and others). In testing, we took a few minutes to calibrate the scanner, but once that was done, scanning was simple. Initially the scans were done at 100 dots per inch (dpi), but you can change to scan at higher resolutions (no custom resolution options that we could see; we were limited to 50-, 100-, 200-, 300-, 400-, 600- and 1,200-dpi options). You also can use the scanner to copy or fax documents — faxing scans at 200 dpi and then you can send the image to a fax printer. Scanning can be done on documents up to 8.5 by 14 inches, and works with Windows 98, Millennium Edition, 2000 or XP computers with USB ports. The scanner costs \$100; more information is available at www.pentaxtech.com.

### Control your PowerPoint wirelessly

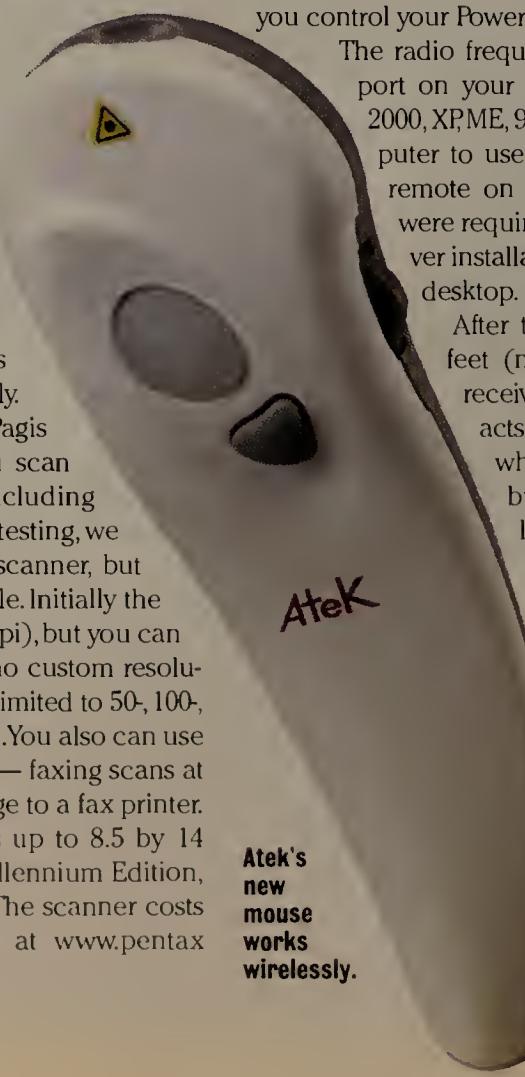
Atek keeps making great products for mobile workers. The last Atek item we tested was the Super Mini Optical Mouse, a two-button mouse that was very mobile. Now comes the Tote-Remote, an outstanding product that lets you control your PowerPoint presentations wirelessly.

The radio frequency receiver connects to a USB port on your laptop (so you'll need Windows 2000, XP, ME, 98 or a Mac OS 8.6 or higher computer to use this). We could easily install the remote on our Win 2000 laptop; no drivers were required. We had to do some simple driver installation (via Windows) on our Win 98 desktop.

After the installation, just be within 30 feet (no line of sight required) of the receiver to run the show. One button acts like the F5 key in PowerPoint, which starts the slide show. A second button on the remote triggers a laser pointer. On the side of the device is a scroll wheel, which lets you change slides (forward and backward).

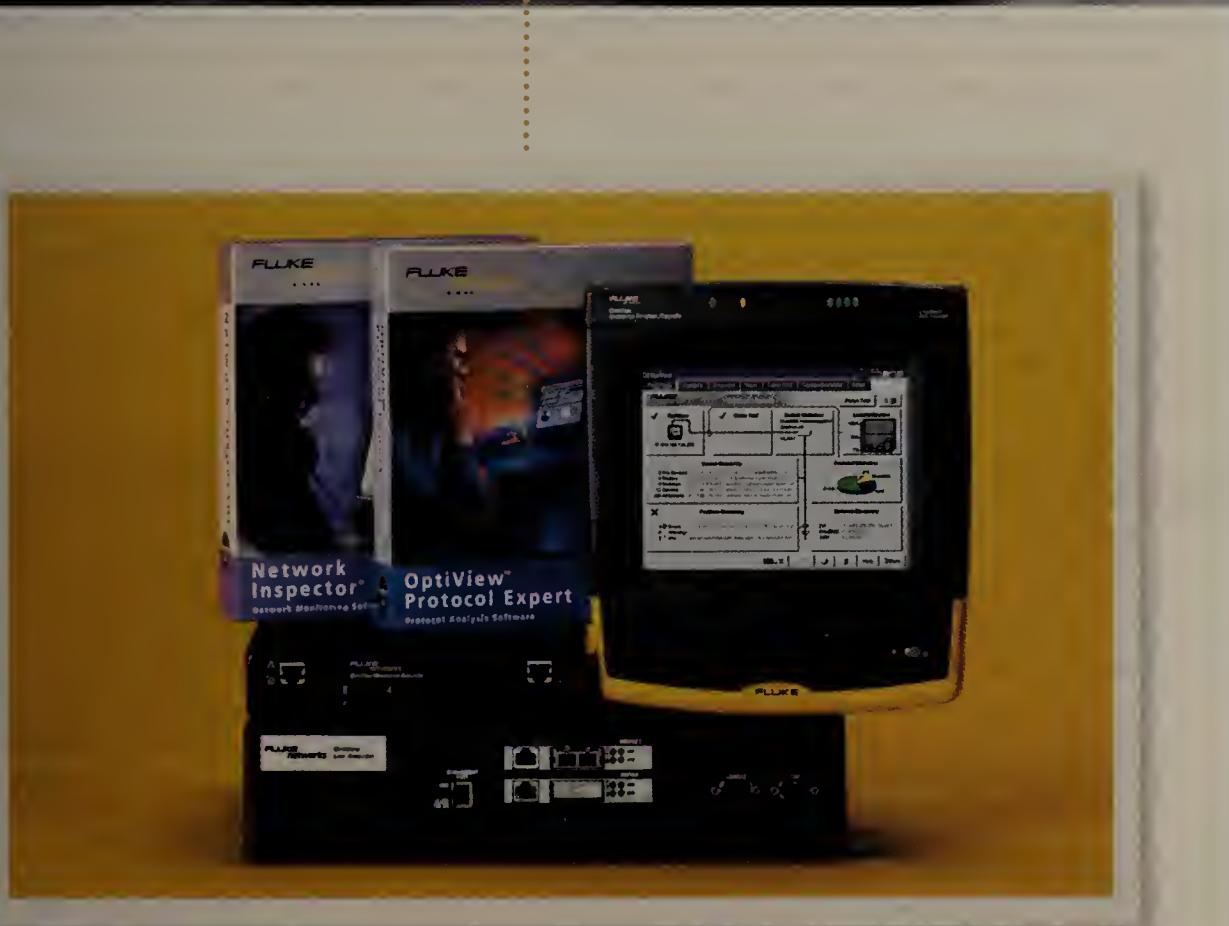
Our tests revealed the remote worked with several cube walls in the way and from the 30-foot limit. Go to www.atek.com for more information.

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## EDITORIAL

John Dix

## The alchemy of route control

In our desperation to reduce network complexity we tend to limit the number of suppliers we do business with and set stringent minimum requirements to determine whom we are willing to consider.

That's generally a good thing. But when it comes to your ISP, the practice simply might ensure you're paying top dollar for what is otherwise a commodity service.

So argues Mike Lloyd, CTO of RouteScience, one of the players in the emerging route control market. Many companies won't talk to an ISP unless they have an OC-48 backbone and squeaky-clean NOCs, even though the quality of their services are virtually the same as those offered by smaller players.

"This is very close to a commodity business," Lloyd says. "It just isn't priced like one." Pricing differences for the same service can vary by 100%. What's more, the more expensive links aren't necessarily the best performing links.

Enter route control. RouteScience and other players provide boxes that sit on your LAN and help your edge routers make intelligent routing decisions across multiple ISP links (see [www.nwfusion.com](http://www.nwfusion.com), DocFinders: 9635 and 9636 for more). That means you potentially can save money by using lower-cost providers *and* increase network performance.

While the various route control players achieve this alchemy in different ways, RouteScience says it does it by "measuring real-time end-user path performance across all available ISP links and then determining the best path based on performance and cost metrics."

You need an extra box to do this because the Border Gateway Protocol (BGP) in your edge routers uses a route selection process that favors older ISPs with short AS-Path lengths, not real-time information about the best link for the job at hand, RouteScience says. The result: BGP sends a disproportionate amount of traffic toward old-timers UUNET and Genuity.

RouteScience says its studies have shown that "while there is ... variation between ISPs, there is no one or two consistently best ISPs for all Internet users; each ISP is best at delivering content to a given set of users at a given moment in time."

The question is, are the cost savings and performance gains great enough to shoulder the extra work of dealing with multiple ISPs? For many companies, the answer will be no. But at the least it is probably worth some investigation.

— John Dix  
Editor in chief  
[jdix@nww.com](mailto:jdix@nww.com)

### Building your own

In his column "Can the IXCs make it as LECs?" ([www.nwfusion.com](http://www.nwfusion.com), DocFinder: 9622), Thomas Nolle suggests that real competitors build their own infrastructure. I am the president of a trade association that represents companies that have spent \$65 billion in the last six years building their own advanced, broadband local networks. Nevertheless, I must take issue with Nolle's overly simplistic view of how to support competition.

The best means of promoting innovation and new technologies is to let all network players interconnect with one another's facilities. This includes the regional Bell operating companies, which now use competitive local exchange carrier facilities for their out-of-region data services. RBOCs are even reselling AT&T's and WorldCom's networks when they provide long-distance service. If Nolle believes RBOCs are "real competitors," he should acknowledge that even they benefit from such interconnection policies. The Internet is another example of many players using one another's facilities.

Nevertheless, many observers are being misled by the Bells' rhetoric that regulation is the problem or that "competitive parity with cable" is the only issue.

The RBOCs have a monopoly on local facilities in the U.S. because they built public local infrastructure as regulated-rate-of-return monopolies without competition over the past 75 years. To think a new "competitor" can or should have to build a similar local infrastructure is silly. No company has this amount of capital. Publicly funded local infrastructure should be shared if it is in the public interest.

The RBOCs' "competitive parity" argument says they should not have to "open" their networks as required by the telecom act because cable companies do not have to open theirs. This is false and mis-

E-mail letters to [jdix@nww.com](mailto:jdix@nww.com) or send them to John Dix, editor in chief, Network World, 118 Turnpike Road, Southborough, MA 01772. Please include phone number and address for verification.

# opinions!

leading. The history, legal and regulatory framework, and technologies of cable and telephone are very different. The cable industry was built relatively recently with private money. The cable tree-and-branch architecture makes it mainly suited for one-way broadcast technology. Furthermore, cable's video operation is subject to "unbundling"—in the form of must-carry and leased access rules, where cable must carry competitors' signals.

If the Federal Communications Commission changes course and exempts the Bells from unbundling, it will kill competition and universal broadband deployment. The RBOCs have a long and public track record of stifled innovation and failed promises on deployment. Without government involvement and competition, the Internet (using Bell public infrastructure in ways they never intended and tried to prevent) would not exist. Without DSL competition, business broadband would be limited to the RBOCs' expensive frame relay and private line services.

John Windhausen  
President  
Association for Local Telecommunications Services  
Washington, D.C.

### Bring on the Razzies

Because Mark Gibbs rightfully bashes the antics of network gear vendors at trade shows ([www.nwfusion.com](http://www.nwfusion.com), DocFinder: 9623), I propose a "Razzie" award for the worst trade show displays. This could be divided into sections such as "Least connection to product" and "Least appropriate material."

I see only good things coming from this. The last thing dot-coms with tight budgets need is to spend money on "performances" that leave IT professionals walking away not even able to remember the product, or worse, having a bad opinion of the company.

Dan Jones  
Oklahoma City, Okla.



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## VENTURE OVER THE HORIZON

Janice Roberts

**A** few years ago, network managers knew where to find the edge of their network: It ended at the desktop, and there was a clear demarcation between the LAN and WAN. Wireless networks have changed that relatively simple scheme.

The edge of the network has expanded to the point where there is really no perimeter.

The biggest driver for the vanishing edge of the network is the wireless Ethernet standard 802.11, also known as Wi-Fi. It is extending the corporate network to employees who are untethered as they move from building to building, site to site, or room to room. Anywhere a Wi-Fi "hot spot" has been installed can be a point of entry to the network. The devices accessing the network also have multiplied. Data-enabled cell phones and PDAs have joined laptop computers in the rush to provide increased mobility to road warriors.

This creates enormous challenges for network managers. Ratification of the 802.11b standard for 11M bit/sec wireless connectivity, equipment interoperability and drastically lower deployment costs provides an entry for all wireless devices into the enterprise network. Gartner estimates that two-thirds of the world's 1,000 largest companies will use Wi-Fi networks by 2005. Wireless networks' obvious benefits are productivity and efficiency of employees with flexibility and rapid deployment of networks. However, they also present major challenges.

Network security is one challenge. The security of 802.11b networks,

# The network's vanishing edge

which use single-key encryption systems, is highly susceptible to "drive-by" hackers. Products are needed to support data protection, authentication and authorization.

Interoperability is another challenge. Even with a specification for compatibility, the standard allows for a plethora of options defined in the task groups and options of the standard.

Perhaps the most impressive challenge is wireless LAN network deployment and management. Many IT staffs are not familiar with wireless infrastructure deployment, management and maintenance. It is difficult to manage a network if you don't know what device is accessing it and from where. Network management is a lot more complex than it was when there was a definable edge.

For venture capitalists, these challenges translate into investment opportunities. Mayfield's wireless strategy starts at the component level and extends to wireless equipment and service companies. One of our investments, Ubicom, makes processors that can be used in products such as wireless access points, routers, broadband modems and voice-over-IP phones. MobileWay, another Mayfield investment, lets companies distribute information and text messages to mobile users globally.

Learning to manage networks that have no edge will be an ongoing issue for network managers. But the benefits from the vanishing edge of the network will far overshadow the difficulties.

*Roberts is a general partner with Mayfield, a venture capital firm in Menlo Park, Calif. She can be reached at jroberts@mayfield.com.*

**Learning to manage networks that have no edge will be an ongoing issue for network managers.**



## REALITY CHECK

Thomas Nolle

**W**orldCom is tanking, set to become perhaps the first big service provider to go Chapter 11. Lucent and Nortel are fighting over who can get the lowest bond rating. Venture capitalists who funded start-up equipment vendors are shopping these companies around, with no takers. Wall Street hates telecom in all its guises, and here's Cisco with a positive earnings story and modestly improved guidance for the future. What gives?

Enterprise spending, that's what. Some have been saying that the enterprise is the new Promised Land for networking. Cisco's performance seems to prove this to be true, but it's more complex than that.

Cisco has turned the corner on revenue trends for all its product areas except, interestingly, routers. Much of this is because enterprise buyers finally are loosening the purse strings on projects long delayed by the unstable financial situation. These buyers have turned to Cisco to solve their enterprise network problems, cementing the vendor's position as the premier player at the edge.

Part of Cisco's success in the enterprise might arise from the continued softness in the key carrier equipment market. Big companies always have rolled their own networks, buying low-level services and equipment to create application services. The explosion of fiber deployment in the last five years was aimed at providing capacity for the supposedly exploding Internet applications. Maybe there was an application explosion, but money wasn't an element in it, and this left a lot of unpurchased bandwidth lying around. Some of that has worked its way into the corporation, where it's being combined with equipment from — guess who? — Cisco to create better application networks. Even voice over IP at the enterprise level is gaining market share, because inexpensive IP gear combined with inexpensive bandwidth equals something cheaper than traditional software-defined voice services from interexchange carriers (IXC).

It can't last, of course. It's not that more unpurchased bits might not end up on the market, but there's a limit to how much incremental capacity businesses can justify in their networks. In a couple of years, this

# Why is Cisco making money?

windfall spending will fall away. Then goodbye, Cisco? Probably not.

By planning or by accident, Cisco's enterprise windfall will have funded the company through the ugliest period in the network industry. Cisco will have a couple of years to reorder its strategy for the service provider area to reflect the new market conditions, including the decline of its favorite IXC customers and the ascendance of the regional Bell operating companies — customers Cisco never really got close to.

Cisco proves that if you can't control how water's generated, it's OK to control drinking. Its products don't create the profitable networks of today, but do control the connection between these profitable networks and the consumers of business services. From that position at the edge, Cisco has learned a lot about network consumption. Given time, Cisco can look the other way — into the carrier networks — and figure out how to mate services in the core to the customers it already knows.

Cisco's enterprise win might illustrate just how bad an "IP-me-too" strategy might have been for Lucent, Nortel and other traditional carrier vendors. Instead of trying to develop a strategy for turning network bandwidth into service dollars that reflected the capital market's risk tolerance and the carrier customers' conservatism, they matched Cisco IP rhetoric word for word. But they couldn't match Cisco's dominance of the enterprise network and service provider edge.

Everybody knows now that the Internet craze was the wrong answer, none more so than old Cisco customer WorldCom and old Cisco competitors Lucent and Nortel. Probably everybody knows that the path to an IP future will take longer to navigate and that it will detour through boring Level 2 services such as frame relay and ATM.

Cisco probably will reap the profits of its legacy as our industry deals with the twists and turns of deregulating the service provider market and restoring capital confidence in networking. And Cisco probably will be around and credible when we get the answers.

Survival seems such a simple thing, but it's the first requirement in being successful.

**Cisco proves that if you can't control how water's generated, it's OK to control drinking.**

*Nolle is president of CIMI, a technology assessment firm in Voorhees, N.J. He can be reached at tnolle@cimicorp.com.*

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# Searching for the QoS Holy Grail

**Implementing QoS in enterprise networks has become a reality, even a necessity, but end-to-end QoS remains an elusive goal.**

■ BY CHRIS GRIFFIN AND GREG GODDARD

With the convergence of voice, video and data in enterprise networks, and the increasing need to cut travel costs, both voice over IP and videoconferencing are becoming increasingly important. When coupled with the ever-present requirement that critical enterprise applications perform at their best, even in a fiscally tight environment, the days of "best effort" service are rapidly disappearing.

Quality of service (QoS) is actually an ad hoc collection of technologies and techniques. This ad hoc nature is what has created a barrier to true end-to-end strategy. Because application, operating system and networking vendors often differ on what set of QoS technologies they implement, it has been difficult for IT groups to implement QoS across their entire networks.

Some say adding bandwidth is effective in providing QoS. While adding bandwidth certainly helps, the real goal of QoS is to provide a level of guarantee to all traffic in the network. This is just as true for a fractional T-1 WAN circuit as it is for a Gigabit Ethernet link. For corporations, QoS can provide assurances that real-time and essential business traffic gets the bandwidth it needs while moving across the corporate LAN — no matter what else is on the network, including denial-of-service (DoS) attacks. QoS can make existing WAN and Internet connections usable again when the added expense of increased bandwidth cannot be justified. Enhancing existing bandwidth to save money will drive most companies to make their first excursions into the world of QoS.

We set out to explore some different approaches and strategies of QoS, test different QoS appliances and discuss ways to implement QoS using equipment you already might own. The best approach to QoS

depends on several situations, which we will highlight.

#### Appliances to the rescue

For many companies, QoS appliances are the first step toward bringing QoS into the network where it is needed most — heavily congested WAN and Internet connections.

We tested QoS-specific equipment from five different vendors using a simulated enterprise network, which included a LAN and branch-office locations connected to the enterprise LAN via frame relay. The corporate office was connected to the Internet via a simulated DS-3. We ran each vendor's equipment through a series of tests meant to replicate common scenarios in which QoS would be used to improve a congested network.

These scenarios included:

- An outbound DoS attack over the DS-3 to affect performance of the corporate Web site.
- Congested WAN links interfering with videoconference and voice-over-IP calls.
- A DS-3 congested with Web and other traffic preventing an MPEG-2 distance training session from working.

In each test, we added enough congestion to cause extreme performance problems with our applications — Web performance was very close to zero, and videoconferencing and VoIP calls could not be made.

We also ran raw throughput tests on each

## Stages of network QoS

**Classification:** Recognizing packets moving across a network as part of an application or flow. This is done by inspecting the packets as they cross the network or by accepting "marks" for traffic that have already been classified. Classification is the most important part of quality of service and in some environments can be the most difficult step. As applications advance, classification becomes more difficult.

A classic example is H.323, used for videoconferencing, which must be examined all the way to the application layer to ensure it is properly classified.

**Marking:** Using information learned in the classifi-

cation stage to tell other network equipment how to handle individual packets. This is usually done by inserting tags such as 802.1p, Differentiated Services Code Point or IP Precedence into the packet (see story "QoS defined," page 54).

In an end-to-end QoS environment, classification and marking are performed at the network edge, even though traffic may be remarked as it moves across the network.

**Enforcement:** Also known as policing. The information learned in the classification stage is used along with current network conditions, such as congestion

level, to determine how to handle the packets. Policing can involve many techniques, including packet drop, various flavors of queuing, traffic shaping and TCP rate shaping. However, the heavy queuing of real-time traffic such as video or voice over IP can make things worse because of increased latency and jitter. Fortunately, some implementations let you control the queue depth. The purpose of enforcement is threefold — to prioritize one type of traffic over another, to avoid congestion by preventing or delaying the transmission of low-priority traffic across a network connection, and to control the rate at which individual streams and hosts are transmitting.

LAN device, as they are expected to sit inline on high-speed networks. Note that it is unusual to have high rates of minimum-sized frames traveling over the network. These numbers are presented only so that the appliance can be properly matched with the demands of the network.

Because some appliances were designed specifically for WAN environments, the full suite of tests were not run on all equipment. See "How we did it," page 56, for more information on the testing equipment used and the simulated enterprise network.



## Allot Communications NetEnforcer 201 and 301

Allot's NetEnforcer 201 and 301 are LAN-based QoS appliances. Each device comes with two 10/100M bit/sec ports, one labeled "External" and one labeled "Internal." The 201 can support configurations ranging from 2M through 10M bit/sec, and the 301 is rated for 100M bit/sec throughput. Our baseline performance tests showed that 32% of 64-byte packets were passed, which increased linearly to 100% as the packet size grew above 512 bytes. While most QoS boxes we reviewed were unable to pass small frames (below 512 bytes in length) at line rate, this should only be a concern if your specific traffic patterns dictate large numbers of such small frames.

NetEnforcer uses a two-stage classification system with the concept of pipes and

virtual channels, and each contain rules and actions. Pipes are the top of the hierarchy and are normally used to differentiate between sites that might be running through the same NetEnforcer appliance. Within each pipe, virtual channels can be defined to differentiate priorities for users or applications, with all unclassified traffic going into the fallback pipe. Classification up to Layer 7 is supported for several common protocols, and support for non-IP protocols is strong. System configuration and policies may be backed up using Trivial FTP and pushed from one NetEnforcer to others. Redundancy via connecting multiple NetEnforcer boxes also is supported.

In our performance tests, both NetEnforcer models did well. With policies enabled to block User Datagram Protocol (UDP) traffic, our HTTP server performance was untouched by the other traffic. Implementing a policy to prefer HTTP traffic over all others was also very effective, with little noticeable difference in performance during our DoS attack. We used NetEnforcer 201 in our WAN testing, and it could classify nearly all traffic flowing by application name. We could get videoconferencing and VoIP working in a predictable manner, although it required some bandwidth carving.

We tested Version 4.2 of the NetEnforcer software. Like most of the products in this review, management is accomplished via a very nice Java Web-based graphical user interface (GUI). The GUI is more complex than other appliances, but is very powerful. Near real-time monitoring lets you see exactly what traffic is flowing over the network and what policies are being

matched. A command-line interface (CLI) is also available that gives access to the underlying Linux operating system. This makes NetEnforcer extremely flexible. The software is broken into monitor, classify, enforce and reporting sections.

Additional software modules can be purchased from Allot and include NetAccountant (extended accounting features, including policy-based bandwidth tracking), CacheEnforcer (network cache enforcement) and NetBalancer (server load balancing). Software to manage multiple NetEnforcers (in groups of 5, 20, 50, etc.) also can be purchased.

### Bottom line

#### Allot Communications

[www.allot.com](http://www.allot.com)

**Category:** LAN appliance

NetEnforcer 201 (up to 2M and 10M bit/sec, up to 12,000 flows) **Cost: \$5,500 to \$7,500**

NetEnforcer 301 (up to 100M bit/sec, up to 96,000 flows) **Cost: \$13,000**

**Advantages:** Very nice Web interface; policies easy to configure; good performance; high level of customization possible with unfettered access to underlying operating system.

**Disadvantage:** Must run the appliance through a shutdown routine before powering off.

**Best suited for:** Users who need extreme flexibility and customization capabilities.

**End-to-end QoS capabilities:** Accepts IP Precedence- and DSCP-tagged traffic; marks using IP Precedence or

DSCP tags based on classification phase.



## Packeteer PacketShaper 2500 and 8500

Packeteer's PacketShaper 2500 and 8500 are LAN-based QoS appliances. Each device comes with two ports (one each for inbound and outbound, respectively). The 2500 can support configurations ranging from 2M through 10M bit/sec, and the 8500 scales above OC-3 (155M bit/sec) speeds. Baseline performance tests showed that they pass over 90% of minimum-size frames and 100% of 128-byte or larger frames.

When you first turn on PacketShaper, all traffic is combined into a default group based on the inbound or outbound direction. If the box recognizes a particular type of traffic, it automatically moves it out of the default group and into a list of classified traffic after it has seen a configurable number of flows. This works well for the majority of traffic, but the occasional flow might run for a while and never be classified outside the default queue. Classification is performed up to Layer 7 for many protocols, and several non-IP protocols (including IPX, Appletalk and SNA) are recognized.

In performance testing, the 2500 and 8500 performed extremely well. Our DoS attack against each PacketShaper model

**See QoS, page 56**

## QoS terms defined

### Flow

A conversation between a single-source address and a single destination using a unique set of Layer 3 addresses and Layer 4 ports.

### Type-of-service (ToS) byte

An eight-bit field in the IP header. IP Precedence, Differentiated Services Code Point and ToS field all use this byte.

### Differentiated Services Code Point (DSCP)

A different use of the ToS byte. Six bits of this byte are being reallocated as the DSCP field, where each DSCP specifies a particular per-hop behavior that is applied to a packet. Support for DSCP still is lacking in some network equipment, however (see RFC 2474). DSCP is not compatible with IP Precedence.

### IP Precedence field

A three-bit field in the ToS byte of the IP header (see RFC 791). Using IP Precedence, a network administrator can assign values from 0 (the default)

to 7 to classify and prioritize types of traffic. IP Precedence is being phased out in favor of DSCP, but is supported by many applications and routers.

### ToS field

Lets values from 0 to 15 be assigned to request special handling of traffic (for example, minimize delay, maximize throughput). The ToS field is being phased out in favor of DSCP (see RFC 1349).

### Multi-protocol Label Switching (MPLS)

A standard for applying "labels" to traffic for the purposes of routing and special handling. Among other things, MPLS can be used to differentiate and prioritize network traffic. Mostly used in WAN and service provider environments (see RFC 3031).

### 802.1p

A three-bit value that can be placed inside an 802.1Q frame tag. It serves much the same purpose as IP Precedence, but is done at Layer 2, so it is protocol-independent. Usually converted to IP Precedence or DSCP when the packet reaches the first router.

### Packet drop

When a queue reaches its maximum length, packet drops can occur. When a packet drop occurs, connection-based protocols such as TCP slow down their transmission rates in an attempt to let queued packets be serviced, thereby letting the queue empty. This is also known as tail drop because packets at the end of the queue prevent other packets from entering the queue.

### Bandwidth carving

Dedicating bandwidth to a specific application or set of applications. Because bandwidth is dedicated, other applications cannot use it, even when there is little congestion on the connection. This usually is done when other QoS methods, such as weighted fair queuing, are not effective in providing the desired handling of priority traffic.

### TCP rate shaping

A technique that modifies the TCP

window size to control the rate at which hosts will transmit TCP-based traffic. When the host believes that the TCP window is full, it will pause its transmissions.

### Priority queuing

Priority queuing supports some number of queues, usually from high to low. Queues are serviced in strict order of queue priority, so the high queue always is serviced first, then the next-lower priority and so on.

If a lower-priority queue is being serviced and a packet enters a higher queue, that queue is serviced immediately. This mechanism is good for important traffic, but can lead to queue starvation.

### Weighted fair queuing (WFQ)

WFQ is a flow-based queuing algorithm that schedules low-volume traffic first, while letting high-volume traffic share the remaining bandwidth. This is handled by assigning a weight to each flow, where lower weights are the first to be serviced.



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**QoS****continued from page 54**

found they could quickly identify and stop the source of unwanted traffic. Rules that preferred HTTP were very effective with almost no perceptible difference in HTTP performance before and during the attack. In the branch-office tests, the video and voice streams were nearly perfect, with no bandwidth carving necessary and little configuration needed. In our final test, some minor bandwidth carving was needed to protect the MPEG-2 stream, but this was expected, as MPEG-2 streams are sen-

sitive to any loss or delay.

The PacketShaper Web-based GUI has classification, analysis, control and reporting sections. The GUI was intuitive and fairly easy to use. Occasionally we wanted more detail and had to turn to the CLI to see what protocols were seen on the network, and how well our policies were being matched. We would like to see more details about the classification process available via the Web interface.

Packeteer LAN expansion modules (LEM) are available for each PacketShaper model — these let the device be connected to additional 10/100

LANs (and Gigabit networks in the case of the 8500). The LEMs can reduce the number of PacketShapers required in a network. Redundancy and hot standby capabilities also are included. ReportCenter and PolicyCenter also are available for central policy management and report generation.

**Bottom line****Packeteer**[www.packeteer.com](http://www.packeteer.com)

PacketShaper 2500 (2M or 10M bit/sec, up to 5,000 or 20,000 flows, respectively)

**Cost: \$12,000**

PacketShaper 8500 (200M bit/sec, up to 200,000 flows) **Cost: \$32,000**

**Category:** LAN appliance

**Advantages:** Excellent performance; GUI is simple and easy to use; LEMs let multiple networks be controlled from the same appliance.

**Disadvantages:** Some classification detail not visible from GUI; very low flow-count traffic may not be classified.

**Best suited for:** High bit-rate connections; networks that are physically close to each other to minimize the number of appliances.

**End-to-end QoS capabilities:**

Accepts IP Precedence-, DSCP-, 802.1p- and MPLS-tagged traffic; marks using IP Precedence, DSCP, 802.1p and MPLS tags based on classification phase; can translate between different marking standards (DSCP to IP Precedence, for example).

## How we did it

We created a midsize corporate network to conduct our testing. The main office and branch office networks were composed of Cisco Catalyst 2924 and 3548XL switches; Hewlett-Packard 2524 switches; Cisco 6509, 5500, and HP 9304m Layer 3 switches; and Cisco 3660 and 7206VXR routers. Branch offices were connected to the main office through a T-1 frame relay cloud configured in a hub-and-spoke topology, while the main office was connected to the Internet via a simulated DS-3. This design let LAN and WAN appliances be tested with minimal reconfiguration.

Each network consisted of multiple Windows 2000, Windows XP and Linux servers and workstations. The corporate office had a Polycom H.323 videoconferencing unit that was configured for 768K bit/sec operation and a Minerva VNP-201 MPEG-2 encoder/decoder set to run at 6M bit/sec. A corresponding MPEG-2 unit was located within the simulated Internet cloud. The other Polycom H.323 station was in the second branch office. All three offices were equipped with Cisco 7960 IP phones.

Baseline throughput and packet-loss testing were conducted using Ixia Communications' 1600/1600T cards and Spirent Communications' SmartBits 2000 and 6000B cards.

Each card was configured for full-duplex, 100M bit/sec operation and used line-rate Ethernet frames between 64 and 1,518 bytes. The SmartBits 2000 cards also were used to

create a simulated denial-of-service attack that consisted of large amounts of Internet Control Messaging Protocol and User Datagram Protocol (UDP).

To generate Web traffic, we used Ixia's IxWeb and Caw Networks' WebAvalanche to make HTTP requests to an Apache Web server hosted on one of the Linux servers in the corporate office. Statistics were observed before and after denial-of-service attacks took place to baseline HTTP performance in the network. These results were compared against statistics taken before and after quality-of-service policies were enabled.

Further tests were conducted by generating congestion over the frame relay cloud using several real world applications, including Web traffic, FTP downloads, Windows file transfers and peer-to-peer traffic using Kazaa. This congestion was significant enough to prevent voice over IP and H.323 videoconferencing from working over the branch office T-1 lines. Subjective evaluations were made of voice and video quality before and after policies were put in place. Additionally, Iperf, a TCP-based network performance tool, was used to judge fair per-flow allocation of resources. More information on Iperf can be found at <http://dast.nlanr.net/Projects/Iperf>.

All tests were conducted in the Network Services Interoperability Lab at the University of Florida in Gainesville.

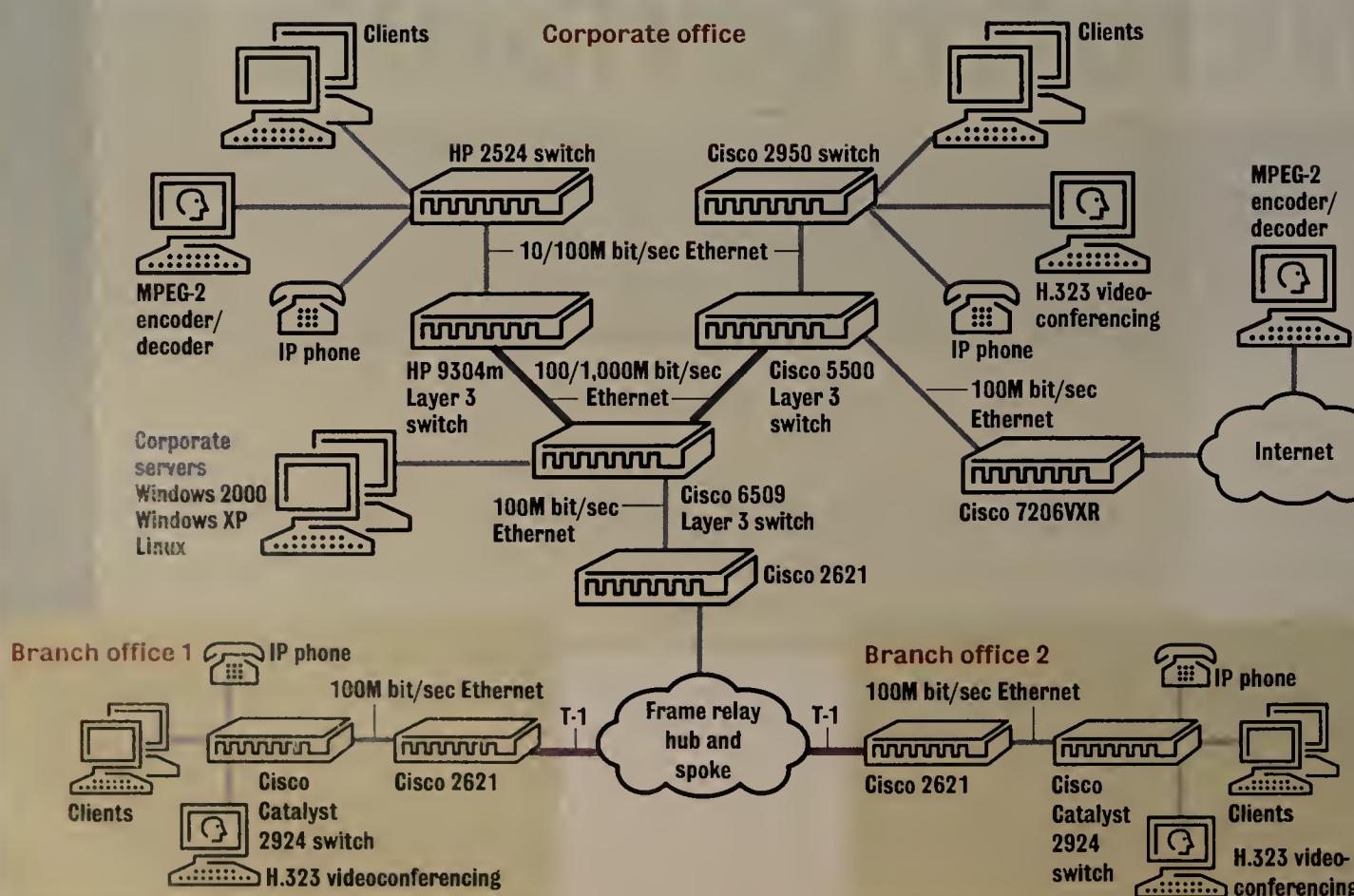
**Sitara Networks QoSWorks 10000**

Sitara's QoSWorks 10000 is a LAN-based QoS appliance rated up to 100M bit/sec of throughput. The device comes with two 10/100 ports, one labeled WAN and one labeled LAN. Baseline performance tests revealed that the unit could pass 30% of the traffic at minimum frame size, going to near line rate once the frames reached 512 bytes in length.

We reviewed two versions of the QoSWorks firmware; 1.9 is shipping now, and 2.0 will start shipping in June. The 2.0 firmware is a big step forward for Sitara because it adds Layer 7 classification for many common protocols, including H.323 and HTTP. It also adds a more dynamic Java-based interface, which adds 1-minute updates for traffic monitoring. Unfortunately, Layer 7 classification of some peer-to-peer applications is not currently available.

QoSWorks did well on our performance tests. It immediately identified the source of our DoS attack and blocked it. It also simply prioritized HTTP traffic at the application layer, without writing a rule specific to the DoS attack, which resulted in the restoration of about 90% of HTTP performance. In the WAN tests, we could prioritize our videoconference at the application layer, with our voice traffic classified based on IP address. Once policies were put into place, the videoconference ran with only minor packet loss, and the voice streams were clear with little latency. QoSWorks includes the ability to limit queue depth for real-time traffic. This can be a bonus for heavily congested networks because it limits latency and jitter. The appliance also can mark traffic in the IP Precedence field of the type-of-service (ToS) byte, but cannot enforce based on it.

The Web-based management interface was easy to use and includes sections on monitoring, reports and policy creation. Near real-time reports make it easy to ver-



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## QoS continued from page 56

ify that policies are being matched. The LAN vs. WAN distinction in the monitoring and policy-creation sections was a bit confusing and could use clarification. In Version 2.0, not all interfaces were converted to Java, so integration between monitoring and the policy editor, for example, wasn't very tight. Sitara says it will address this in future releases.

Sitara also has its QoSDirector product for central policy management. Redundancy is available via QoSArray, which is a separate product from the QoSWorks 10000.

### Bottom line

#### Sitara Networks

[www.sitaranetworks.com](http://www.sitaranetworks.com)

QoSWorks 10000 (up to 100M bit/sec)

**Cost:** \$25,000

**Category:** LAN appliance

**Advantages:** Good performance; queue depth controls for limited delay/jitter.

**Disadvantage:** Understanding traffic direction can be a little confusing.

**Best suited for:** Novices, or traffic with low latency requirements.

#### End-to-end QoS capabilities:

Accepts IP Precedence and DSCP tagged traffic; marks using IP Precedence or DSCP tags based on classification phase.



### Krentrox ServicePoint 2040-tmc DSU

The Krentrox ServicePoint 2040-tmc DSU is a WAN-based QoS appliance with built-in DSU/CSU and QoS functionality. Krentrox uses Packeteer's QoS classification

and enforcement engine. This device actually replaces your existing DSU/CSUs and sits on the serial side of your WAN router, making it easy to install in virtually any existing WAN topology. Baseline performance tests indicate that it can pass traffic at the same rate as a native T-1 interface.

Because ServicePoint 2040 sits directly on the frame relay link, it can see things that LAN-based QoS boxes normally cannot see, such as Local Management Interface exchanges and Data Link Connection Identifier (DLCI) mappings, and router-originated traffic. During the first part of performance testing, the box could classify traffic by DLCI, which makes it very easy to write policies for specific frame relay permanent virtual circuits. In a hub-and-spoke topology, a ServicePoint 2040 sitting at a corporate office can enforce policies for traffic between branch offices, which can reduce the number of units necessary, depending on the traffic makeup. Because the ServicePoint is connected to the serial interface of the WAN router, it can see and prioritize router-originated traffic, such as toll-bypass VoIP traffic or routing updates, which a LAN-based box could not handle.

Unfortunately, during more advanced classification and enforcement tests, we ran into a bug that prevented some traffic from being properly classified. While bug encounters are not necessarily unusual during testing, this one brought to light two important limitations of ServicePoint's implementation. First, traffic must be seen by the unit before a policy can be created for it. This means policies cannot be pre-written or based on IP address only. Second, if the classification engine does not recognize the traffic, it doesn't show up on any utilization graphs or reports. As a result, a fairly utilized T1 looks almost empty from the management console. Because of these issues, we couldn't test the box fully. Krentrox says the traffic classification bug has been resolved and is shipping an update to fix the problem.

Management is handled via ServicePoint Manager, sold separately but required for the monitoring and traffic management functions of the DSUs. The server compo-

nent runs on a Windows NT or 2000 server, with clients that can be run on Windows 98 or above. ServicePoint has a fairly intuitive interface and provides a rich set of features, including near real-time monitoring of all the DSUs, centralized storing and deployment of policies, and report generation. It can scale up to 600 DSUs natively and go higher by deploying remote collection agents.

### Bottom line

#### Krentrox

[www.krentrox.com](http://www.krentrox.com)

ServicePoint 2040-tmc DSU (V.35

Interface) **Cost:** \$5,000

ServicePoint Manager (required) **Cost:** \$10,000

**Category:** WAN appliance

**Advantages:** Easy to deploy in any existing frame relay network; can monitor and manage the frame relay network and the applications using it.

**Disadvantages:** Policy definition not flexible enough for heavy management; cannot effectively manage large amounts of UDP traffic because of where it sits on the network.

**Best suited for:** Frame-relay traffic monitoring.

**End-to-end QoS capabilities:**

Accepts IP Precedence-marked traffic.

52M bit/sec. We tested WiseWan 201 with a serial interface sitting between the router and the frame relay network, and WiseWan 601 with two Fast Ethernet interfaces. Baseline performance tests showed WiseWan 601 could pass all frames at its rated speed for all frame sizes.

For the most part, the unit performed well in testing. It could prioritize HTTP over all other traffic during the DoS attack and maintain performance to 90% of what it was before the attack. Rules prioritizing H.323 videoconferencing and voice traffic were effective in maintaining voice and video quality during congestion with only minor video glitches.

When we introduced a large amount of "connectionless" traffic such as UDP into the network, WiseWan sitting on the WAN side of the router had increased difficulty maintaining desired policies. This is because UDP traffic has no inherent congestion control (as does TCP), so WiseWan couldn't tell the sender to "slow down." Because the router itself will drop traffic if the maximum speed of the serial interface is exceeded, connectionless traffic can "push" all other sources out of the way. This makes bandwidth guarantees difficult to honor in high UDP situations or unusual network conditions, such as a DoS attack. If you expect such conditions on your network, you might want to opt for the LAN-based WiseWan units.

As is the case with Krentrox's ServicePoint, because WiseWan can sit on the WAN, it has a unique perspective of the WAN. This lets the box provide useful information on network congestion, control multiple sites in a hub-and-spoke configuration and manage traffic originating from the router itself. WiseWan is capable of up to Layer 7 recognition for a large number of common protocols.

Management of WiseWan devices is through WanXplorer (we tested Version 5.2), a client/server product that runs under Solaris or Windows. The server communicates with the WiseWan device via a SNMP channel. The server contains a database back end that stores policies and sta-

**See QoS, page 60**

## NetReality WiseWan 201 and 601

NetReality's WiseWan comes in both LAN- and WAN-based formats. WiseWan 201 is rated at speeds of up to 2M bit/sec and is available in serial, Ethernet and DSU/CSU formats. It inserts into the network via a WiseCable, which lets the connection be passive until the unit is activated. WiseWan 601 supports Ethernet and High Speed Serial Interface (HSSI) configurations and is rated at speeds of up to

## Two other QoS options

### Procer Networks MLS

Procer Networks' MLS is a 24-port, multilayer switch with Routing Information Protocol and Open Shortest Path First routing capabilities. In addition to wire-speed routing and switching, a network administrator can prioritize traffic based on user-defined policies. Up to 100 policies can be created using a Web-based graphical user interface and can be applied per port or to all ports. Each policy is based on a set of actions that apply to each packet, which include "discard," "do not drop," "mirror" and "prioritize." Actions can be based on IP port number, IP address or subnet. Additional QoS features are being planned.

#### Procer Networks

[www.proceranetworks.com](http://www.proceranetworks.com)

Procer MLS (24 fixed 10/100 ports and two optional gigabit uplinks) **Cost:** \$9,000

**Category:** Router/switch

### U4EA FlowFusion

U4EA's FlowFusion device also can control WAN bandwidth. It consists of two 10/100M bit/sec ports (one for inbound, one for outbound) and usually is inserted between a LAN switch (the branch office) and the upstream WAN router.

U4EA is promoting FlowFusion specifically for use in videoconferencing and voice over IP, but it can be used with any IP-based application.

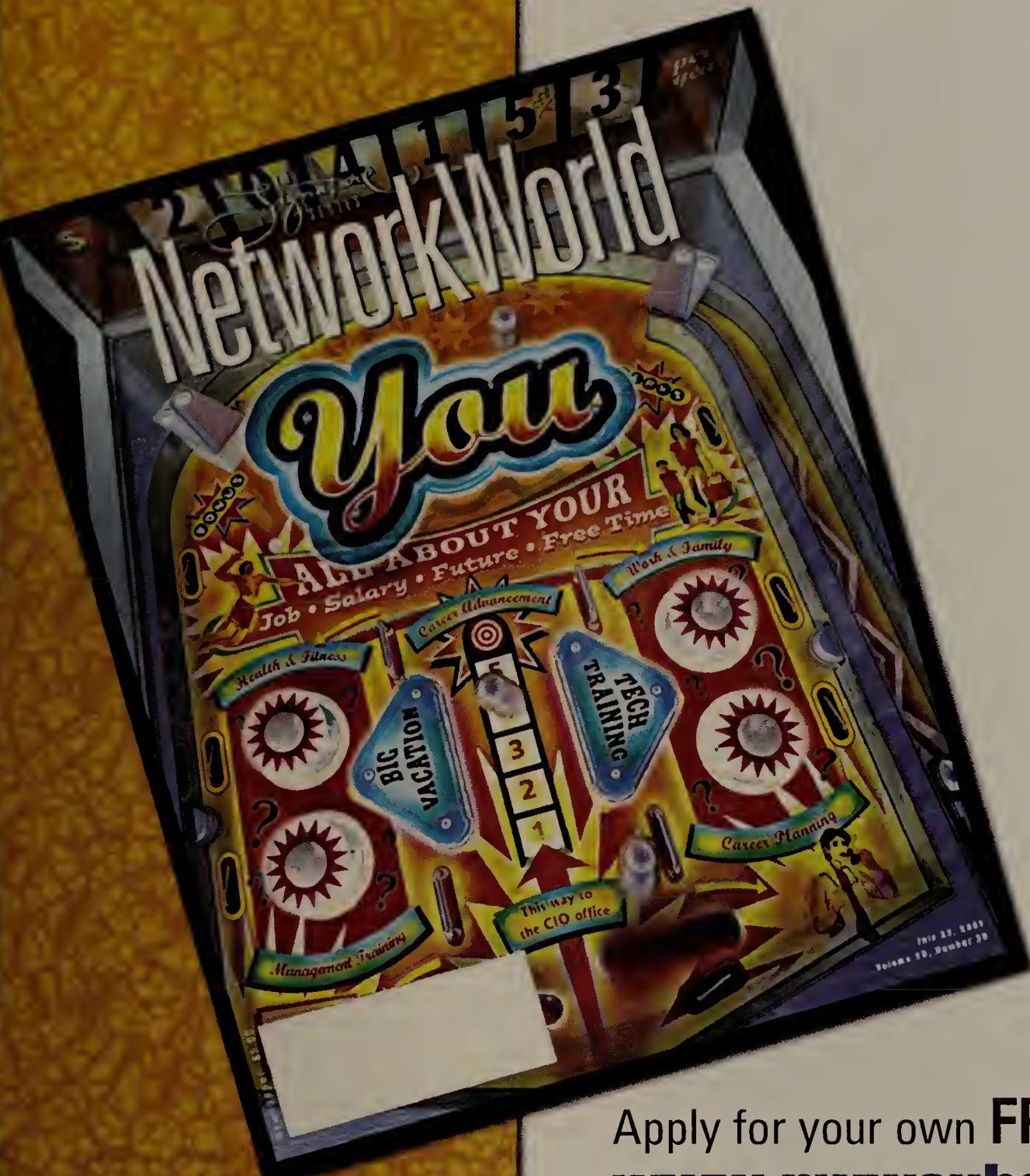
#### U4EA

[www.u4eagroup.com](http://www.u4eagroup.com)

FlowFusion 2M (up to 2M bit/sec) **Cost:** \$7,000

FlowFusion 5M (up to 5M bit/sec) **Cost:** \$12,000

**Category:** WAN appliance



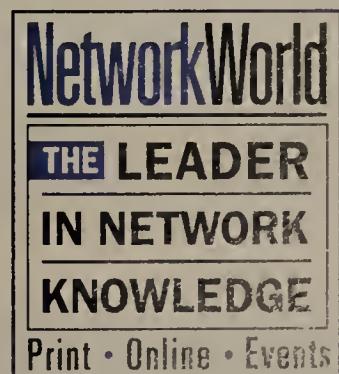
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**QoS****continued from page 58**

tistics, which are automatically aggregated over time. Users initiate client connections to the server to obtain statistics and make policy and configuration changes. The client can run as a native Java application or via a Web browser.

The user interface was easy to use and straightforward. We could create, activate and move between policies with just a few mouse clicks. Configuration is kept centrally, making unit replacement a snap in the event of failure.

**Bottom line****NetReality**[www.net-reality.com](http://www.net-reality.com)

**WiseWan 201** (up to 2M bit/sec) **Cost:** \$9,000 for Ethernet; \$10,000 for serial or DSU/CSU

**WiseWan 601** (up to 52M bit/sec) **Cost:** \$27,000 for Ethernet; \$28,000 for HSSI

**Advantages:** Good performance; using WanXplorer, very easy to control large numbers of devices at once; can monitor and manage the frame relay network and the applications using it.

**Disadvantages:** From monitoring interface, difficult to tell when traffic is matching policies; high connectionless traffic percentage can affect bandwidth guarantees with the WAN-based unit.

**Best suited for:** Frame relay or mixed frame relay/Ethernet environments, in which a common management interface is desired.

**End-to-end QoS capabilities:** Marks using IP Precedence or DSCP tags based on classification tags.

Packet classification also may be based on virtual LAN, ingress port, media access control address or Appletalk socket. If a protocol cannot be classified at Layer 4 (such as H.323), rules must be written based on IP address of the sender or receiver. The switch also can act based on traffic that has been preclassified and tagged using 802.1p or the IP Precedence field of the ToS byte. Once the traffic has been classified, packets can be placed in any one of four system queues. The queues are serviced in a strict priority or weighted fair fashion.

In our tests, we used weighted fair queuing, the method that the vendor recommended. We wrote access policies to prioritize TCP Port 80 into the highest-priority queue and placed everything else in the lowest-priority queue. Because we used a Gigabit Ethernet connection, we used equipment from Ixia Communications and Spirent Communications to generate enough background traffic to cause congestion and interfere with the corporate Web site. Once the policy was enacted, the Web site returned to normal with little difference in performance from the uncongested network.

We ran the same test with a videoconference between two locations on the corporate network. Because we used H.323, the 9304m (like most routers) couldn't classify above Layer 4. So we used IP address-based access policies to distinguish the traffic. Again, after applying the policy, video quality returned to normal with little distortion.

Overall, we found the QoS implementation in the 9304m basic, but effective in providing QoS for the limited set of tests we ran. Implementing QoS in this way requires that you know what traffic is going over your network and probably only can be obtained using separate protocol analyzers or Remote Monitoring-style probes. The design of the 9304m and other such high-capacity Layer 3 switches is geared toward accepting QoS tags, usually in the form of IP Precedence bits, and enforcing based on those tags, rather than performing much classification.

**Bottom line****Hewlett-Packard**[www.hp.com](http://www.hp.com)

**Procurve 9304M Cost:** \$6,270 (base price, no modules)

**Advantages:** High Performance; simple configuration.

**Disadvantages:** Limited classification capabilities; limited tag-generation capabilities; limited QoS reporting.

**Best suited for:** Core networks

**End-to-end QoS capabilities:**

Accepts IP Precedence- and 802.1p-tagged traffic; marks using IP Precedence or DSCP for rate-limit functions only.

**Cisco 7206 VXR**

Cisco's 7206 VXR is a more classical IOS-based software router more likely to be found at the edge of a midsize or large enterprise network. As such, it has many more QoS features than the higher-end



Layer 3 switches, but its performance expectations compared with a Layer 3 switch are also significantly lower.

We tested a Cisco 7206 VXR running IOS 12.1. Our initial tests ran the same way as the 9304m testing. We used access lists to differentiate HTTP traffic from other traffic and used class maps and policy maps to place the traffic into a queue. We used class-based weighted fair queuing with guaranteed bandwidth to satisfy all requests. As with our other tests, the corporate Web site was nearly unaffected by other traffic on the network, even in extreme conditions. Other options include priority queuing, low-latency queuing and flow-based weighted fair queuing. Congestion avoidance algorithms and committed access rate rules also can be used to back off TCP-based transmissions.

A recent addition to Cisco's QoS strategy is Network Based Application Recognition (NBAR). This gives the router some Layer 7 classification capabilities that normally are found only on QoS appliances. We repeated our tests with NBAR to classify our Web traffic based on URL rather than TCP port number. We saw the same results, but noticed a bit higher CPU utilization on the router, no doubt because of the increased classification load. Because classification was occurring above Layer 4, we just as easily could have prioritized one URL over another, which is something that up until now was the domain of the network QoS appliance. Although NBAR does not recognize as many protocols as most of the QoS appliances, its modular design means that new protocols can be added to the router without a software upgrade.

Because this router sits closer to the edge, it usually is tasked with marking and classification. We extended our policy maps to mark the traffic as it exited the router with an IP Precedence mark, so other routers upstream might recognize it. A quick traffic capture confirmed the correct ToS bits were set.

As was the case with HP's 9304m, classifying traffic with the 7206 VXR requires that you know what types of traffic are going over your network. Protocol-analysis tools are required here. It also requires a fairly detailed understanding of how different protocols act and react to different congestion situations — for example, how HTTP acts vs. FTP. NBAR helps the situation, as long as the protocol in which you are interested is supported.

**Bottom line****Cisco**[www.cisco.com](http://www.cisco.com)

**Cisco 7206VXR Cost:** \$17,500  
(7206VXR, NPE400, 2FE ports)

**Advantages:** Good performance; flexible classification and tag-generation cap-

abilities; some Layer 7 classification of traffic.

**Disadvantages:** Limited QoS reporting; doesn't support as many Layer 7 protocol classifications as the appliances.

**Best suited for:** Edge routing on midsized or large enterprise networks.

**End-to-end QoS capabilities:**

Accepts IP Precedence-, DSCP-, 802.1p- and MPLS-tagged traffic; marks using IP Precedence, DSCP, 802.1p and MPLS tags based on class maps; can translate between different marking standards (DSCP to IP Precedence, for example).

**End-to-end QoS?**

Using these pieces should let you implement a comprehensive QoS strategy. Using the appliances or smaller routers to classify, mark and enforce at the edge, and core routers to expedite critical flows, you'll have most locations in the network covered. The exception is the desktop. Most QoS designs do not give critical traffic from desktops or servers any special treatment until it hits the first router, where it is classified and marked. This may not be good enough. That 100M bit/sec uplink off of a 24-port 10/100 switch is often a spot for congestion. So what should you do?

Because QoS is most applicable for real-time traffic such as voice or video, that is where you should concentrate your efforts. If you have equipment that will set 802.1p tags for you (as many VoIP phones do) and a switch that has more than one egress queue and understands 802.1p, then you may be in luck, at least for those specific services. Even better, some newer edge switches also can prioritize traffic based on IP precedence, DSCP values, or even IP address, which opens the door to a wider variety of applications and services that can be prioritized at the edge.

But for most desktop applications, there are few options. Although most recent versions of Windows support 802.1p in some manner, the network card also must support it, and native application support is rare.

Third-party vendors such as Intel and 3Com ship additional software with their 802.1p-enabled network interface cards that lets policies determine which traffic is tagged. These policies must exist on each desktop and be kept up to date, which can be time-consuming. The good news is that most desktop applications easily can deal with short periods of congestion, so QoS to the desktop might not be required.

The term "QoS" has long instilled fear in the minds of network engineers. Although the panacea of end-to-end QoS is on the horizon, effective QoS capabilities exist and can be deployed today.

*Griffin and Goddard are network engineers at the University of Florida working for the Office of Information Technology — Network Services division. They can be reached at cgriffin@ufl.edu and ggoddard@ufl.edu.*

**Hewlett-Packard Procurve 9304m**

In addition to testing appliances designed to perform QoS from the ground up, we also tested routers that include QoS features, routers you already might have in your network. We ran these devices through the same series of tests to see what could be achieved at little or no cost. We tested Hewlett-Packard's Procurve 9304 (also known as the Foundry Networks' BigIron 4000) and Cisco's 7206VXR. We tested only the feature sets we thought would be common to most modern routers in use today.

HP's Procurve 9304m is a high-capacity Layer 3 switch usually found in core enterprise networks. This Layer 3 switch implements a core set of QoS features that are likely to be found in varying degrees in most midlevel to high-end network equipment.

Classification is mostly done via access policies that match IP addresses, IP protocol, Layer 4 ports or all of the above.

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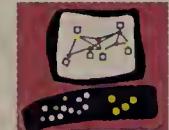


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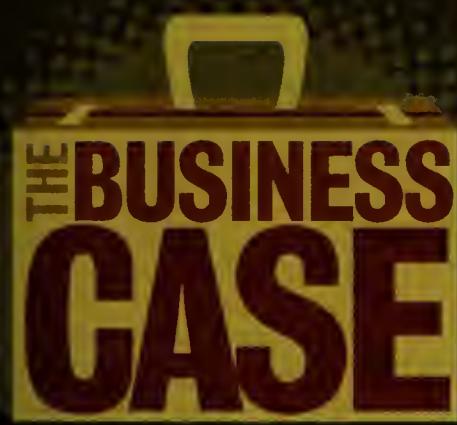
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**Before you sign up for any of the new WAN services on the market, you need to know that the technology works. But you also need to know that the business model makes sense. In this first in a series of occasional features, TeleChoice analyzes the business case behind the latest service offerings.**

# Metropolitan Ethernet services

■ BY BETH GAGE

On paper, point-to-point metro Ethernet service can be a huge money saver for enterprise customers on several counts.

First, the service is being sold at 50% to 75% less than comparable SONET-based services, such as frame relay.

Second, metropolitan Ethernet comes in neat 1M bit/sec increments, as opposed to the traditional frame relay/ATM hierarchy of 1.5M bit/sec T-1s and 45M bit/sec T-3s, which means customers can buy only what's needed.

Third, customers can reap cost savings on customer premises equipment. Ethernet cards for premises-based routers cost about \$300, but SONET cards cost closer to \$5,000 for the same router.

Finally, there are reduced training requirements because network staffers are already familiar with Ethernet and don't have to learn complicated WAN technologies.

Despite these strong selling points, however, metropolitan Ethernet has not taken off as many expected it would. And, with the recent Chapter 11 bankruptcy filing of metropolitan Ethernet leader Yipes Communications, the viability of the entire market sector has been called into question.

So before you jump into a contract for metropolitan Ethernet services, you need to understand how this business model functions from the perspective of the service provider.

There are two basic approaches to building Ethernet services — one for start-ups and one for established interexchange carriers (IXC) and incumbent local exchange carriers (ILEC).

The start-ups, which don't have legacy SONET gear, typically use all-Ethernet platforms, which can be more expensive to build in the long run than simply adding Ethernet to the edge of a SONET infrastructure, according to Dennis Richardson, director of Ethernet and security services at WorldCom.

And since venture funding has dried up, it's increasingly difficult for start-ups to expand their networks beyond a few core cities.

"Market adoption has been slower than expected," says John Kane, CEO of Telseon, which offers wholesale services to carriers, service providers and large enterprise customers. "While the economics are impressive to customers, establishing and growing a service footprint continues to be a challenge for the market."

Even the larger players are building networks slowly, on a case-by-case basis. "The capital-friendly environment has changed, and today we're deploying services more gradually than we'd like," says Martin Capurro, director of product management for IP access services at Qwest.

Beyond the cost of building the metropolitan backbone, start-ups and incumbent service providers face daunting financial challenges when it comes to delivering metropolitan Ethernet.

Getting across the last few hundred feet from a metropolitan ring to a building is probably the most painful part of providing services. The time required to file plans with a municipality, gain rights of way and do construction can range from a few weeks to 18 months. Connecting a new building can cost \$50,000 or more.

In today's market, service providers must cost-justify a new building connection on the first customer, so the contract term has to be good or the monthly price has to be more than \$1,000.

Providers connecting buildings for one or two low-revenue customers are betting on future tenant adoption — a risk that many providers won't take these days.

And if you're negotiating a contract with a service provider, prepare for a serious upselling pitch. The IXC and ILECs won't typically consider delivering service to a new customer only for Ethernet traffic. They are more focused on offering a suite of services, including voice, TDM or other data services.

Plus, given the low prices for Ethernet services (\$200 to \$400 for 1M bit/sec as compared with an average of \$800 for T-1), service providers also will push customers to increase their bandwidth requirements.

Another factor keeping metropolitan Ethernet prices low is that there is plenty of room on service provider networks for high-speed, very bursty customer traffic. Most companies provision their networks with 10G bit/sec links and have so few customers that engineering for the "peak instant" of IP traffic bursts is not an issue. And prices for long-haul connection have dropped through the floor. In the future, this could be a sticking point if long-haul prices stabilize or increase and as more companies adopt metropolitan Ethernet services.

## Summing up

The Yipes bankruptcy filing casts strong doubts on the viability of the start-ups. ILECs, such as SBC Communications and Verizon, on the other hand, are in the enviable position of simply playing a quiet defense, following other carriers on an as-needed basis.

The main competition will most likely be between the IXC and ILECs, fueled in part by Ethernet platform vendors, including Cisco and Extreme Networks. These Gigabit Ethernet vendors have been dropping low-cost platforms at large customers and helping them "do it yourself" with dark fiber or wavelength services. The IXC and ILECs do not want service revenue eroded, so they will have to provide some level of metropolitan Ethernet service.

Metropolitan Ethernet services have much to offer companies needing "raw" high-speed Internet access and point-to-point transparent LAN services. And metropolitan Ethernet services will probably survive and grow; it's just a question of which service providers will still be around to deliver the services.

*Gage is vice president of telecom consultancy TeleChoice. She can be reached at bgage@telechoice.com*

## Top 5 questions to ask your carrier

1. **How do my applications and requirements match up with your services?**
2. **What about availability? Can your services reach all my sites?**
3. **How quickly can you provision service for me? What is your "on-time" track record?**
4. **What kind of SLAs do you offer, and how can I collect?**
5. **How do you ensure business-quality performance, and how is the service supported?**

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## Pity your poor network administrator

The functions of network management systems have long been defined by the venerable FCAPS standard, an acronym for fault management, configuration, accounting, performance and security. FCAPS speaks specifically to network man-

agement of the network, but also is useful in assessing management interfaces of the devices that power networks.

Your good old Layer 2 and Layer 3 boxes take on more functionality with each upgrade. And new, appliance-based prod-

ucts represent more gear that must be understood and properly managed. Highly functional, easy-to-use management interfaces that provide clear visibility into these boxes should be more than just a competitive advantage for vendors — they should be a prerequisite for getting their feet in your door.

At Miercom, we assess the management interface of every product we review, and we group our own requirements into five FCAPS-like categories.

- Ease of use. A hallmark of a well-conceived management application is organized presentation. If your network administrators can navigate to the necessary screens with little help, you've probably got a winner. On the other hand, if it is kaleidoscopic, laden with vendor-specific nomenclature, and easy to lose context, it may very well be a loser.

- Reporting and logging. Every product should be able to cough up at least a handful of "canned" reports. It's not unreasonable for vendors to charge extra for more robust reporting features, but you should get at least some useful reports as part of the base system. Event logs should provide plenty of information and be sortable, filterable and, above all, understandable by people other than the product's designers.

- Real-time monitoring. Most applications should include counters and health statistics. Flexibility is what distinguishes good monitoring screens from excellent ones. Better monitoring functions enable your staff to choose which statistics they want to view, as counters or charts, and over a period of time they specify.

- Event/alarm notification. We can't remember the last time we saw a device without SNMP support, but today you should also expect notification — in the form of a page, e-mail or highly visible alert. We've seen some elaborate notification mechanisms that do everything short of sending someone to your home. But again, flexibility is the key. Your staff should be able to choose how they get notified and be able to define event thresholds for what is a major problem and what's a minor one.

- Diagnostics and troubleshooting. Relatively few of the devices we've seen at Miercom's labs offer proactive tools for troubleshooting. But one outstanding tool we've seen recently is a T-1 trunk-monitoring tool on an IP PBX system. It not only gave all the particulars on the incoming T-1 (such as line encoding and framing), it also could grab a time slot, place a phone call and give a readout of the call setup. The best part was that it came with the base package at no extra cost.

Use these criteria to structure your questions about a product's management capabilities. Your staff will be especially grateful for the effort.

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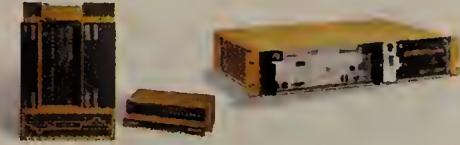


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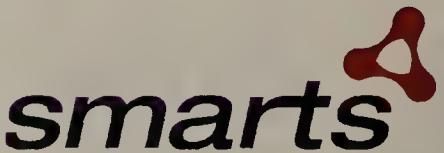

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Management

# Strategies

CAREER DEVELOPMENT  
PROJECT MANAGEMENT  
BUSINESS JUSTIFICATION

## Setting up new employees

A variety of provisioning schemes speeds up the process of getting user accounts and other resources to new hires.

■ BY DENI CONNOR

You've just received a phone call from the sales manager, who has hired a new employee and needs to get her a laptop, cell phone, pager, PC and access to the network and applications.

To do this, you must fill out a bunch of forms to requisition a laptop, cell phone and pager, and get someone on your staff to install and configure the PC, manually create a network account and grant access to the applications she needs.

That doesn't start to take care of the rest of the items the employee requires to be productive — telephone credit card, company credit card, business cards, employee identification badge. Tracking each task can be complicated.

Paper- or e-mail-based provisioning systems often break down when employees transfer to other departments, no longer need access to the company's accounting system or leave the company. IT managers have no foolproof way to determine whether all the company's assets — both tangible and intangible — are returned.

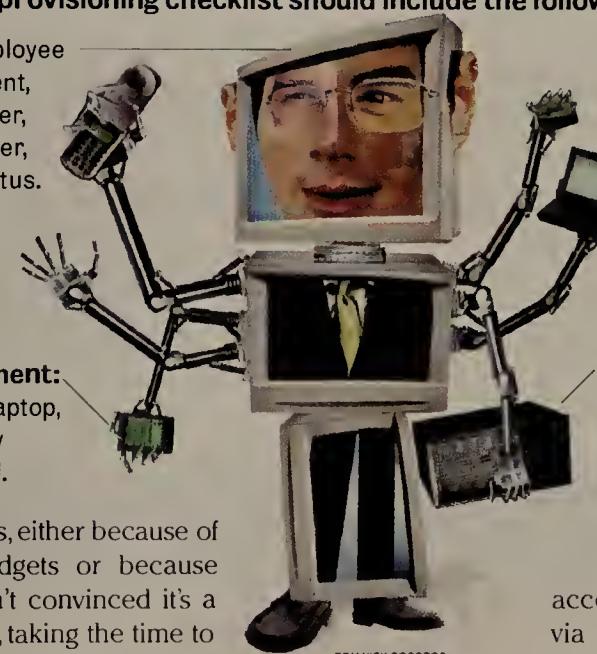
During the past few years, several tools have evolved to help IT managers automate paperbound or e-mail-driven processes for assigning resources to new workers. Dubbed employee-provisioning software, these packages tie into network directories already in place.

By and large, though, most companies have resisted attempts to automate the pro-

### Getting employees the goods

An employee-provisioning checklist should include the following information:

**Employee:** Employee name, department, location, manager, telephone number, employment status.



**PC:** PC configuration, applications required.

**Other equipment:** Phone, pager, laptop, PDA, company badge, keycard.

**Network access:** Network groups to which the employee belongs.

visioning process, either because of crippled IT budgets or because management isn't convinced it's a priority. However, taking the time to develop a good provisioning plan expedites the onerous process and gets new hires to work quicker.

Mount Sinai Medical Center's IT department has adopted a system that starts with a paper form and ends with an employee who can be fully provisioned and productive in as little as week, says Peter Strifas, senior directory engineer for the university-based hospital system in New York City.

Strifas stitched together a provisioning system that relies on Novell's eDirectory and DirXML metadirectory software, which are part of Novell's Employee eProvisioning bundle. "It will allow us to create one user account in an eDirectory tree, and DirXML will automatically propagate this user data into disparate systems, allowing the user access to our [employee and customer] portal, e-mail and production network," he says.

When an employee starts work at Mount Sinai, his department manager fills out a form requesting network access. The form is forwarded to a security administrator who adds the user into eDirectory using Novell's

iManager Web-based tool. From there, access privileges are distributed to other applications, and the employee is automatically given access to e-mail, the portal and production network. Employees gain

vides network access to students and employees.

"We have a couple of different pieces, including getting their e-mail automatically provisioned when they get their network logon," says Brian Wiatr, senior systems administrator for the school district. He uses the DirXML connectors between NDS eDirectory and GroupWise to set up his Windows NT and NetWare users.

When a human resources employee processes a new hire, the DirXML connector picks up the changes and propagates them to NDS eDirectory.

Similarly, when employees leave the company and are deleted from the system, that change is automatically propagated to the directory and the user's access privileges are deleted.

Wiatr says employee-provisioning software has let him and the other systems administrator concentrate on other network needs. However, he doesn't plan to extend the provisioning system to include access to PCs, phones and pagers because he can't justify the cost.

"We're light years behind that at this point," Wiatr says. "We have two systems administrators and 26,000 users, so we're doing whatever we can to reduce mistakes and the load on systems administrators."

At Burlington Northern Santa Fe Railway (BNSF), Cherry Hanneman, senior manager of network security, hopes to take provisioning a step further by including hardware and other gear.

BNSF has implemented automated network access using WaveSet Technologies' Lighthouse for its 40,000 employees. "WaveSet's Lighthouse product provides us a single repository that is an IBM DB2 database," Hanneman says. When an employee joins the company, that person is added to a human resources database maintained on the company's mainframe. From there, information on individual users is distributed to the DB2 database that controls access to the network. Accounts for NT and Microsoft Exchange are automatically added via XML connectors that WaveSet wrote.

Starting this month, the company will provision employees with phones, pagers and computers. Until that time, managers used a Web-based workflow form that initiates the process of getting equipment. ■

### Employee-provisioning software

A variety of vendors offer software that automates the process of provisioning network accounts for new employees.

Vendor	Product	Directories supported
Access 360	EnRole	Active Directory, iPlanet Directory Server, NDS eDirectory, Oracle OID
Business Layers	eProvision Day One	Active Directory, NDS eDirectory, Syntegra's Aphelion 2001 Directory
Novell	Employee eProvisioning	Active Directory, Critical Path, IBM SecureWay, iPlanet Directory Server, Innosoft Directory, LDAP3, NDS eDirectory
WaveSet Technologies	Lighthouse	Active Directory, LDAP3, NDS eDirectory

access to applications via Novell's ZENworks for Desktops.

Removing users from the network is a snap, too. "When the user account is disabled, the user can no longer log into eDirectory and therefore can no longer access the applications," Strifas says.

By automating network, e-mail and portal access, IT has reduced the amount of time it takes to add users to the system by 30% to 40%. "That leaves them free to do other things — intrusion detection and other more physical types of security tasks," Strifas says.

Going forward, Mount Sinai plans to tie its human resources systems into the DirXML system. When that's done, information entered into the system will be added automatically to the network directory, where it can be used to get employees the equipment they need.

The hospital also plans to add access to the phone system and pager distribution to the provisioning system.

The Hartford Public Schools in Connecticut recently deployed an employee-provisioning system that also uses Novell's eDirectory and DirXML.

The school's system automatically pro-

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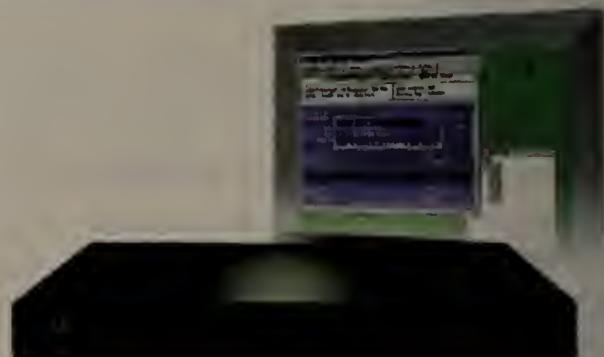
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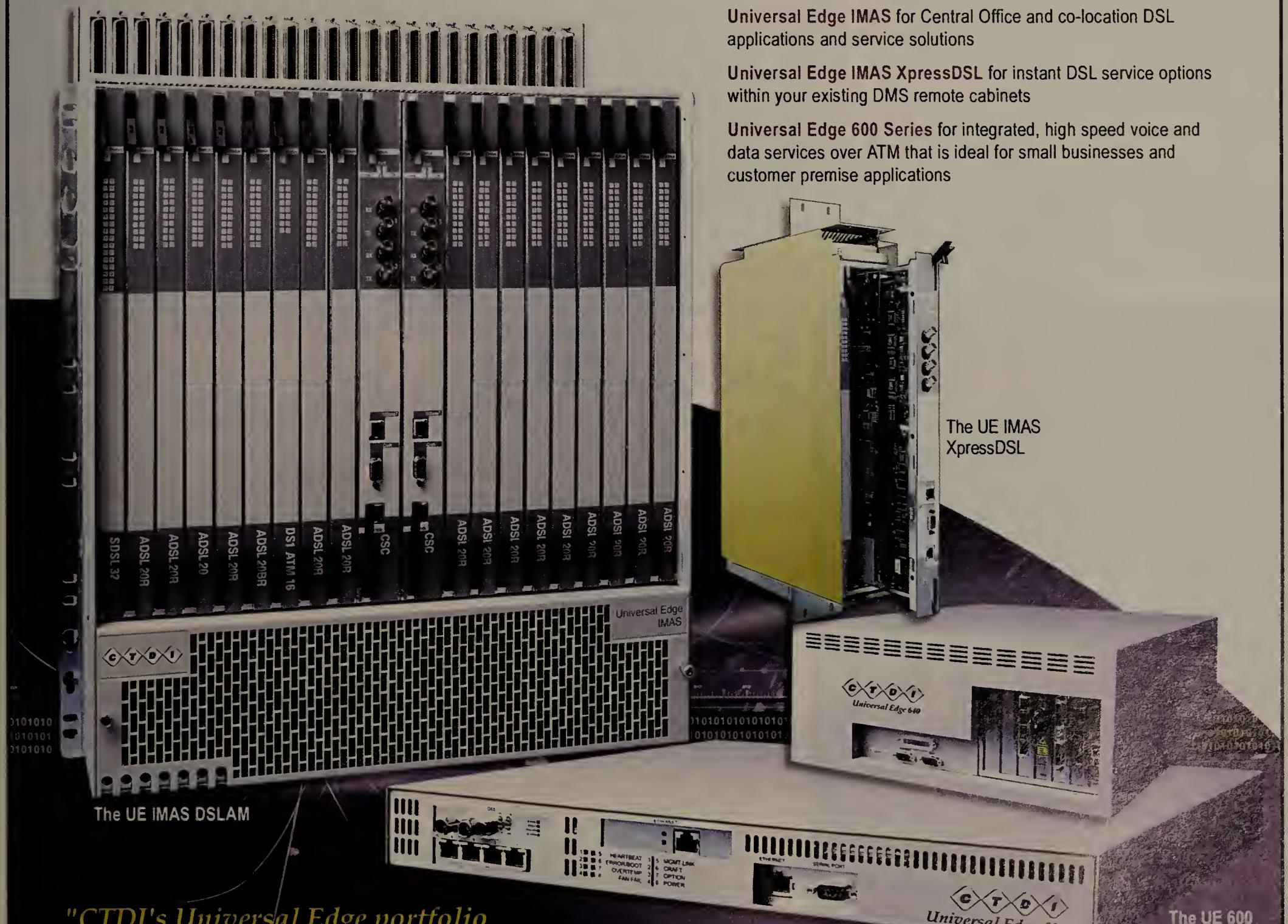
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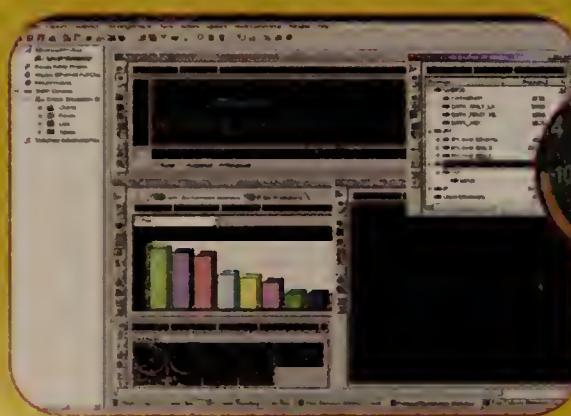
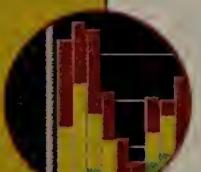
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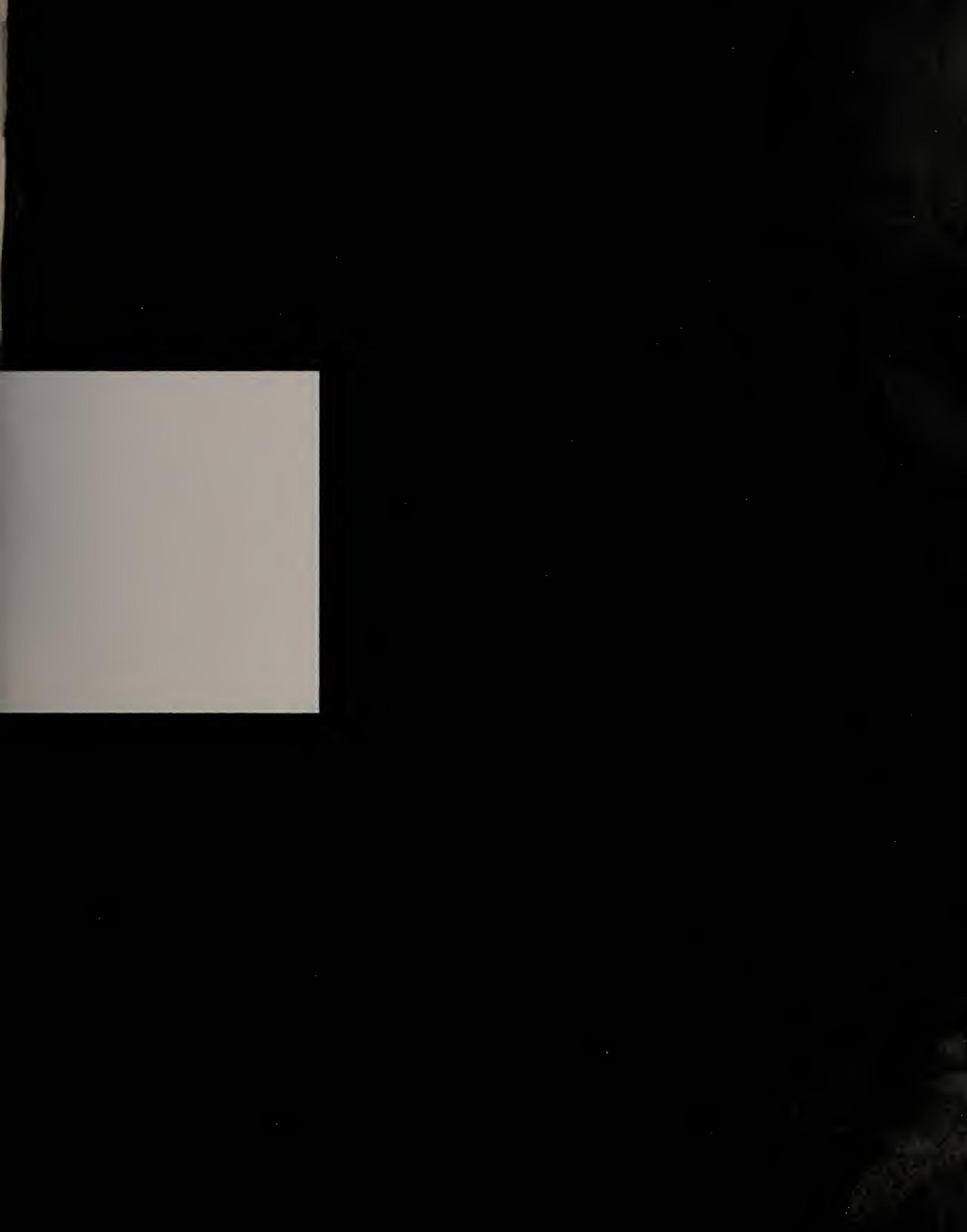
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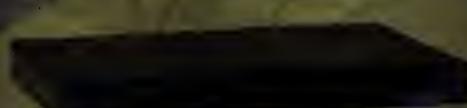
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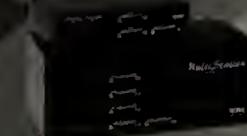
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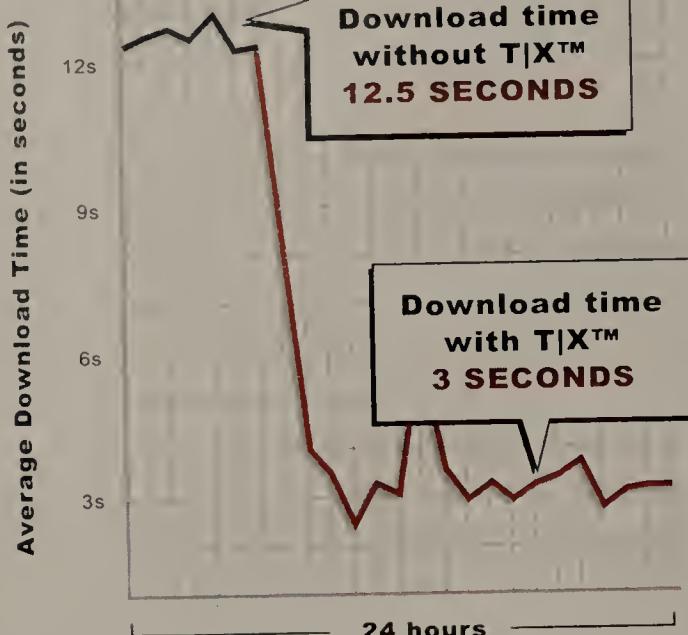
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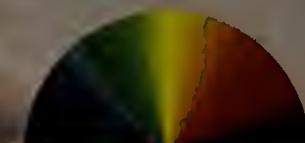
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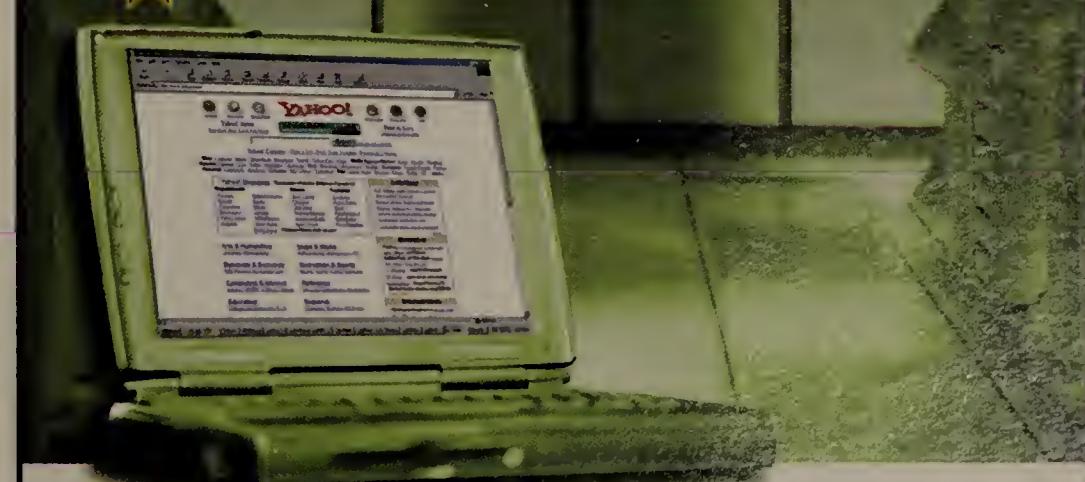
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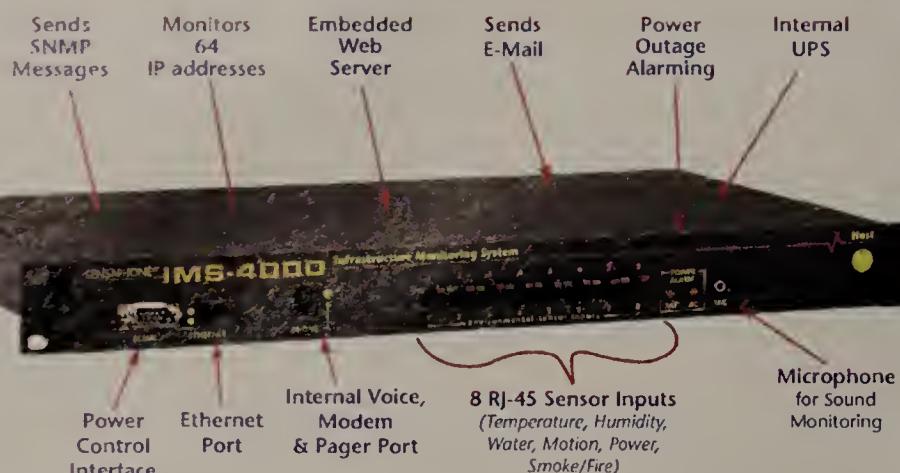
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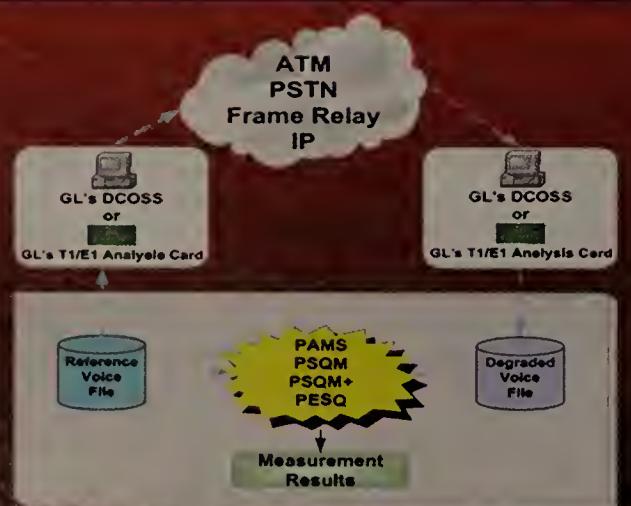
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**Systems Analyst** to analyze and develop reports and applications using SOL and Visual Basic; convert FoxPro applications to SOL and Visual Basic applications; maintain SOL data warehouse, FTP, file conversions, uploads, and other applications using Crystal Reports and Pro-Clarity applications; and analyze user requirements, procedures, and problems to automate or improve existing systems and review comp. Sys. capabilities, workflow, and scheduling limitations. Req. M. S. in Comp. Sci. or Engineering or related science. 40hrs/wk. Send recent resume to: Kathy Londow, MMCC, 1407 Union Ave., Suite 200, Memphis, TN 38104. Ref. Code: TN-JZ

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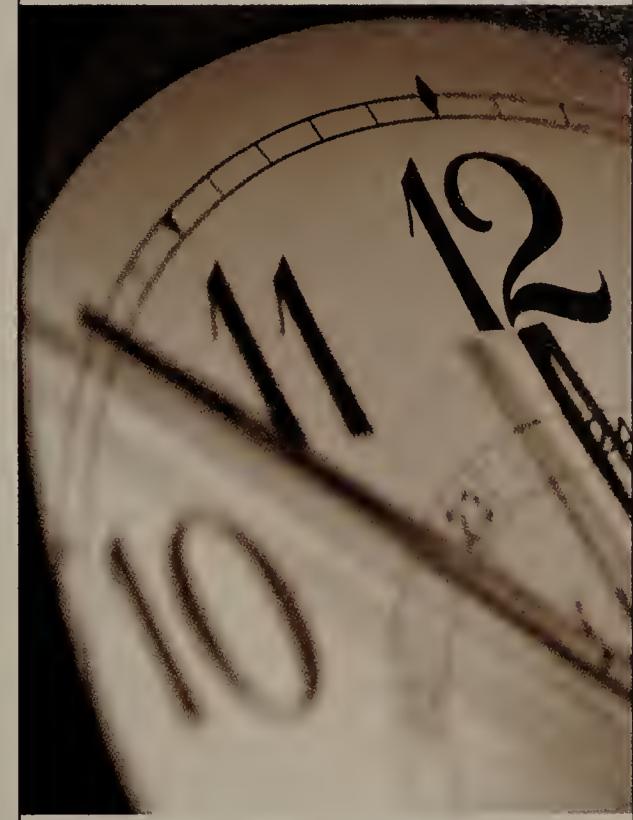
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# NetworkWorld

## Editorial Index

### A

Access 360 67

AirDefense 18

Akamai Technologies 35

Alcatel 16

Allot Communications 53

Aprisma 6

ARRIS 41

AT&T 35

Atek 48

Atrica 41

### B

Brocade Communications 14

Business Layers 67

### C

Cable & Wireless 38

Caldera 1

Check Point Software 31

Cisco 1, 16, 51, 53

Conectiva 1

CoSine Communications 8

### D

Deutsche Telekom 6

Digital Island 35

Disobey.com 48

### E

Electronic Pocket 21

Extreme Networks 8

### G

Genuity 41

Good Technology 6

### H

Hewlett-Packard 6, 26, 53, 86

High-Density 48

### I

Iambda Networks 8

IBM 31

Infineon Technologies 41

Intel 12, 41

Ixia Communications 41

### J

Juniper Networks 16

### K

Kentrox 53

### M

Mellanox Technologies 12

Microsoft 6, 18

### N

Neoteris 21

NetReality 53

Nortel 41

Novell 67

### P

Packeteer 53

Panicware 48

Pentax Technologies 48

PeopleSoft 31

Premonia 1

Procera Networks 53

Proficient Networks 42

### R

Research In Motion 6

RouteScience Technologies 50

### S

SAP 10

SBC Communications 35

Sharp 47

Silverback Networks 31

Sitara Networks 53

SnowShore Networks 42

Sun 6, 31

SuSE 1

Symbol Technologies 21

### T

Tivoli Systems 12

Tropic Networks 8

TurboLinux 1

### U

U4EA 53

Unisphere Networks 8

### V

VeriSign 6

Verizon 41

Vigilance 31

### W

WaveSet Technologies 67

WaveSmith Networks 8

### Z

Z-Tel 42

## Advertiser Index

Advertiser	Page #	URL




<tbl\_r cells="3

**Cisco**

continued from page 1

**1. End the waiting game**

"The only problem I have right now [with Cisco] is waiting for equipment," says Michael Robinson, network communications director at Jackson State University in Mississippi. "It's always hard to get products through the channel."

Robinson says he could go to other sources, such as Internet sites that sell discounted Cisco gear, or integrators that are Cisco resellers, but then he wouldn't get the educational discount he receives through his Cisco educational channel partner.

"It used to be that if I ordered something, I'd have it in a week," Robinson says. "Now I'm waiting three weeks usually for the delivery of any equipment."

"I've noticed that Cisco's time to market for new and cutting-edge products is great," says Henry Greener, network architect at Eastern Bank in Lynn, Mass. "But their time to delivery has started to worsen in the last six months to a year. Even for their low-end routers like the 2600 series — the time between order and delivery is pretty significant now."

**2. Openness**

"I would like to see Cisco embrace open standards more," says Jim Olson, CIO of Waterbury Hospital in Connecticut. "I have noticed over the years that when companies become pretty good in size, they can get arrogant as to what standards you should obey. They

seem to think [everything] should be their standard." Olson cites proprietary Cisco technologies, such as Cisco's SCCP protocol for IP telephony. "I'd rather not see Cisco make up their own standards so that [their products] do not integrate with anything else; that does a real disservice to users."

While proprietary protocols could be seen as part of Cisco's effort to get customers to deploy its products end to end, this is not always the best way to build a network, others say.

"[Cisco] is trying to create an environment where they're an end-to-end solutions provider," says Bill Stevenson, network security officer for New Century Mortgage in Irvine, Calif. However, he says he prefers a more heterogeneous network deployment.

"I don't like the idea of using Cisco solely as an end-to-end network security provider," Stevenson says. "I don't like to put all of my eggs in one basket. I don't want to see a vulnerability in one place extend across the network."

**3. Know your customer**

"The ability [of Cisco] to hand off accounts from one part of the organization to another has been a problem for us," says Mitch Davis, director of academic technology and consulting at Stanford University in Palo Alto. Davis says his department recently completed an upgrade of its Cisco switches, and moved into a project to deploy Cisco Architecture for Voice, Video and Integrated Data IP telephony gear on campus. "The initial handoff didn't come off cleanly in terms of

knowledge transfer about what we're doing here," between Cisco's data communications engineers and voice engineers, he says.

Davis says that while Cisco's breadth of product offerings is a plus, it also might be the limiting factor in terms of helping customers integrate different parts of their network.

"It's almost like you have to start over again," when going from one project to another, Davis says. "They quickly get up to speed, because Cisco has really smart people," Davis says, but new engineers from the same company "should not have to ask us questions about our network in the first meeting."

**4. Software issues**

"I'd like to see them a little more responsive in terms of issues with their software," says New Century Mortgage's Stevenson. "I've just seen some instabilities with some [Cisco] software products," he says, specifically with the CiscoWorks management platform. "Just like any software vendor, they need to keep their software products secure and up to date."

While the software Cisco provides for managing its hardware is very useful, Hold Brothers' Lukas says, it has its bugs just like any other pieces of code.

"I love the software features on Cisco's equipment," Lukas says. "They solve some serious issues ... [but] I cannot stand that they have releases where things do not work from previous software versions. Cisco will sometimes add features in new versions of its management software, or even IOS, that are incompatible with older features. It really creates quite a problem."

**5. Ethernet everywhere**

"One thing I would like to see Cisco really push more is Ethernet in the first mile," Eastern Bank's Greener says. "It would be in their own best interest if Cisco could really push that initiative and work with the telcos to get them to work toward [metropolitan] networking and Ethernet in the first mile."

While Cisco has its hand in many different technologies, such as IP voice, content networking and storage, the company should be working to get WAN connection speeds up to date, Greener says. Such an initiative would be beneficial to Cisco's overall Ethernet business because Cisco already has such a strong hold of

the LAN market, he adds.

"You're really subject to the slowest link in your network, which is always the first mile," Greener says.

**6. Innovation, not acquisition**

"Cisco is not first to market with new solutions," Lukas says. "Their track record shows that they acquire companies, which by definition means the solutions are out there being sold," before Cisco has them. Lukas cites technologies such as multilayer switching and VPNs as technologies Cisco acquired through acquisition.

"It is funny that some customers won't even consider certain pieces of gear, but the day after Cisco buys the company, all of a sudden it is OK to buy that product," Lukas says. "Since Cisco purchases innovation, it follows that the innovation comes from outside Cisco."

**7. Be more direct**

"I would like to buy direct," says Tom McCormick, senior technical analyst with Carnival Cruises in Miami. "One of the largest problems with

Cisco is that they force you to buy through a [value-added reseller] or partner."

While VARs can be helpful for some customers, McCormick says an avenue should be available to buy direct for companies that are not "as big as General Electric," as McCormick puts it, but large enough to handle their technology.

"Their value-added resellers don't really add much value," he says. "If you are a large IT shop like us or any other large corporation, you don't need some guy to come in here to configure your switches for you. They usually know less about your network than you do. I don't need that."

**More online!**

Read Cisco's response to this customer wish list.

**DocFinder: 9651**

**Brocade**

continued from page 14

doing scientific computing, government agencies and the entertainment industry, Helland says. Carriers are also prospective customers.

James Opfer, chief analyst at Gartner DataQuest in San Jose, says LightSand is giving companies a more predictable and reliable way to move data by enabling its transmission over SONET.

"It's of substantial interest to companies with multiple sites to be able to move data rapidly and reliably between those sites," he says.

"LightSand is offering the capability to match the full speed of Fibre Channel," he adds.

Akara, based in Kanata, Ontario, is another company that is focused on delivering storage over SONET products.

LightSand is headed by CEO Philip Black, formerly CEO of network equipment company Tekelec and CEO of storage vendor BoxHill, and Kumar Mallavalli, who is LightSand's chairman and was a co-founder of Brocade.

As for Brocade, it will announce an expansion of its partner program to provide more support to businesses moving from direct-attached to networked storage with multivendor SANs. Hewlett-Packard will be introduced as Brocade's first Qualified Support Partner at the Premier Level, meaning HP will help companies with SAN upgrades and offers migration planning, on-site repair and replacement, and additional SAN support.

Other announcements from Brocade will include:

- A new remote SAN lab that will let Brocade train one-third more people than today, expanding opportunities to gain SAN expertise in areas not near Brocade lab space.

- An online resource called SAN Info Center that provides information for all parts of the SAN life cycle.

- A partnership with IT education and training firm Global Knowledge to deliver Brocade-authorized training worldwide.

- A new Brocade certification, the Brocade Certified SAN Manager.
- Recognition of companies such as BMC Software and Computer Associates whose applications interoperate with Brocade's SAN infrastructure.

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## BackSpin

Mark Gibbs



# Four parts of the Privacy Apocalypse

**P**art 1: Reader Sean Wachob dropped me a note: "I'm sure you're familiar with the insanity that is the Digital Millennium Copyright Act. Your Backspin article in the May 27 issue ([www.nwfusion.com](http://www.nwfusion.com), DocFinder: 9643), which announces how to circumvent the Sony copy protection mechanism, violates this law. You, the magazine and anyone who sells black marker pens (a device used to illegally copy software) could be held liable." Ha. You'll never get me coppers.

**Part 2:** I just read that the Biomedical Security Institute ([www.biomedsecurity.org](http://www.biomedsecurity.org)) has developed something called the Real-time Outbreak Detection System to analyze hospital admission records to look for epidemics. The intention was to detect bioterrorism, but the system also has been shown capable of detecting normal influenza outbreaks.

Should this be cause for concern? Well, as we develop evermore in-depth data on everything from consumer purchasing to individual health records and develop tools to perform increasingly subtle analyses, the possibility of powerful commercial groups turning those same resources to their nefarious purposes increases phenomenally.

Of course, for this to be a real threat requires that they have access to your personal data. Wait a

minute ... they already do! Oh well.

**Part 3:** When Louis Freeh, the last director of the FBI, took office, one of the first things he did was get rid of the PC in his office.

And if what I hear about computing in the FBI is true — that 386s and 486s are its state-of-the-art desktop machines — I think Freeh's attitude had a significant bearing on the organization's IT thinking (or lack thereof).

The FBI currently is undergoing a major overhaul, but it will take years for it to become as computer savvy as it needs to be. Its ability to protect us will be significantly limited because of this. If you have a complaint related to the online world, perhaps about your identity being stolen, how useful is the FBI likely to be?

**Part 4:** Speaking of powerful commercial groups: "The Motion Picture Association of America [MPAA] proposes that every Analog to Digital Convertor be controlled by a 'cop-chip' that will shut down the device if it is asked to assist in converting copyrighted material, thus 'plugging the analog hole.' For example, your cell phone could refuse to transmit your voice if you wandered too close to the copyrighted music coming from your stereo." — from the Electronic Frontier Foundation media advisory: "Hollywood Wants to Plug the 'Analog Hole'" ([www.nwfusion.com](http://www.nwfusion.com), DocFinder: 9644).

I touched on the MPAA's megalomaniac tendencies in a recent column ([www.nwfusion.com](http://www.nwfusion.com), DocFinder: 9645), and I am not surprised to find that these nutcases in the news again.

The Electronic Frontier Foundation summarizes the MPAA's plans as a "three-part agenda — controlling digital media devices, controlling analog converters, controlling the Internet — ... a frightening peek at Hollywood's vision of the future."

I know I throw around accusations of megalomania and idiocy somewhat glibly, but when you look at the reality of trying to legally force the electronics industry to implement expensive and ultimately breakable voodoo antitechnology, you can only conclude that the MPAA bigwigs (to quote Jerry Seinfeld: "Who are these people?") are drinking their own Kool-Aid.

We're on the brink of a cultural disaster that goes way, way beyond perverted digital-to-analog converters and the enforced use of technology.

The DMCA, the MPAA, the senators who have their hands in the pockets of the MPAA, and the Recording Industry Association of America (see "Privacy and extremists," [www.nwfusion.com](http://www.nwfusion.com), DocFinder: 9645) look a lot like the Four Horsemen of the Privacy Apocalypse.

*Gloom and doom to backspin@gibbs.com.*

## 'NetBuzz

News, insights, opinions and oddities

**By Paul McNamara**

### Readers let HP know they aren't laughing

Oh, my. Hewlett-Packard has stepped into the public-relations doo-doo right up to its armpits.

That's the only conclusion to draw from reader reaction to last week's column ([www.nwfusion.com](http://www.nwfusion.com), DocFinder: 9652) taking HP to task for a TV commercial that makes men look like idiots. The spot depicts a guy hunting down items off a "shopping

list" that we later see is a collection of photographs printed by his wife using HP technology. The punch line: "A shopping list that won't confuse your husband."

HP isn't the first to dump on men for fun and profit, of course; this type of commercial is an increasingly common annoyance. It looks as though a lot of men — and women — have had their fill. No topic in my three years of writing this column has generated more e-mail. And, of the 70-plus readers who took the time to respond, all but a couple are sick of seeing men being whipped like rented mules.

There were short-and-sweet nods of support:

"Right on, brother," Keith Harding writes. . . . "Thank you!" offers Rich Earl. . . . And my favorite from Jarrod Culberson: "Kick some ass, Buzz!"

What should concern HP is quite a few readers are more than just mad.

"I'll never use an HP product again," pledges one.

"This 'idiot' often finds himself in a decision-making capacity on network and IT technology," another writes. "Guess which vendor ain't gonna get chosen."

"I'm sure I'm not the only one considering a boycott of purchasing HP products while this ad runs without a formal apology," Gary Largent adds.

Man, noted that the HP ad is symptomatic of a larger problem.

"Not only do I get tired of seeing 'men are idiots' in advertising, but also in mainstream TV programming," Duston Suits writes. "'Home Improvement' was cute during its run, but now other shows have taken exactly the same theme — an entitled, self-centered, but ultimately lovable husband careens from one marital

quagmire to another by angering his wife."

While Buzz worries that his cantankerous reaction to this commercial may signal an eroding sense of humor, another reader sees a different force at work.

"I'm not sure that your being a 'humorless crank' is the reason this sales approach gets under your skin — it's just because you're too old," Jay Perkins writes. "It's new, it's now, it's Gen-X marketing. The scary thing is, apparently it works."

Other readers tried to apply reason to the cause.

"Funny, we invented steam engines, the radio, airplanes and computers, and make up the bulk of the technical and engineering job sectors, yet we're the dolts who can't figure things out," J.D. Fulp writes.

A few opted to counter HP's tone-deaf humor with the genuine article:

"I agree that HP is wrong in its approach," John Johnson says. "I just hope they will continue to simplify their products so men can use them, too."

"I had a lot to say about this issue," Todd Ryan offers, "but this is all my wife would type for me."

And there was this question regarding the internal logic of the commercial:

"Why would the wife be sending the husband out to shop for products that she already has?" Chaz Barbour asks. "Sure, for staples it makes sense, but one of the items is a coconut. Who the hell needs two coconuts? Gilligan?"

Yes, there were a few who defended HP, or at least suggested that no man has a right to complain.

"The advertisement is wonderful and to the point," Donna Rupert says. "Sorry, men, you usually buy the wrong items at a store."

"Oh, for cryin' out loud!" Karen Dombek exclaims. "This sort of ad is used about women daily. . . . I guess the shoe hurts when it's on the other foot."

However, far more women rejected eye-for-an-eye stereotyping.

"I say amen to your article," Kris Sopel writes. "If these ads were aimed at women, there would be a huge public outcry, boycotting and NOW rallies."

Right on, sister.

*Got something to add? The address is buzz@nww.com.*

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